

APPENDICES

Phase 2 of Rural Depot Project: Best Practices of Rural Recycling Depot Programs

What has been Implemented and What still Needs to be Done

(E & E Funded Project Number 45)



Stewardship
ONTARIO

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Appendix 1: Interview Questions

Where do you promote our BlueBox depot program? Please check all that apply:

Check	Venue	Number of Sites	Location (s)
	Waste Disposal Site		
	Grocery Store		
	Convenience Stores		
	Seasonal Bait Shops		
	Hardware Stores		
	Libraries		
	Schools		
	Banks		
	Post Office		
	Other		

1. Do you consider the depot as centrally located within the community? Please describe the depot's location with respect to the community.
2. What is the maximum distance that the majority of residents must travel to reach the depot?
3. Please describe the management structure of the site. Please differentiate between responsibilities of municipal staff and on-site attendants.

Maintenance of Site – Depot Attendants

4. Please describe the step-by-step process involved in returning one's recyclables to the site. (please include explanation of how the sorting process)
5. Do you have attendants at your site (s)?
6. If so, how many attendants work on the site at any given time?
7. How many attendants work on the site in total?
8. How much training is provided to the attendants? Please describe the nature of training.

9. Is there adequate ongoing communication between depot attendants and municipal staff? Explain how you communicate with each other.
10. What are your regular hours of operation?
11. Who are the depot attendants and what shifts do they normally work?
12. Do you offer extended hours of operation to accommodate higher usage due to the seasonal population?
13. If yes, please indicated the time schedule of the extended hours offered.
14. Do you have any unattended containers for residents who cannot make it during the scheduled hours?
15. If no, why? If yes, please describe the arrangement.

Collection of Recyclables

16. Do you rely on the same contractors to provide collection and processing services?
17. Do you itemize costs according to lift fees, hauling fees, or processing fees? Please specify.
18. Do you compact your materials? If not, why?
19. Do you have a power generator at your site?
20. Do you co-mingle materials? Does the picky-up truck separate them the same way?
21. Do you lease or rent collection containers?
22. Do you need more collection containers? If yes, is cost preventing you from getting more collection containers?

Diversion Policies

23. Do you provide free Blue Boxes to residents?
24. If yes, how do they obtain them? If no, where do they get them and what is the cost?
25. Do you or have you used clear bags to increase capture rates of recyclables?
(If yes – please describe the results. If no – please describe why it is not used)
26. Any suggestions for improvement? Are there any issues that people need to be educated on?
27. Do you have any diversion policies such as mandatory recycling by-laws or user pay systems? Please describe.
28. Has a committee ever been established (ie. Waste Management Advisory Committee) to relay concerns and needs of the community to the Township Council? If yes, please describe its role and the work it has completed.

Appendix 2: Rubric - Assessment with Depot Attendant Input

1. How would you rate your promotional venues?

Please note: the rubric refers to the checklist of promotional venues in Appendix 1.

1	2	3	4	5
Promotion is limited to one or less venues.	Promotion in some areas.	Promotion in numerous high traffic areas.	A diverse mix of promotional venues in numerous high traffic areas.	Exceptional promotional coverage. There are no gaps in the checklist. The 'other' column is also complete. A diverse mix of promotional venues in high traffic areas.

Comments:

2. Appearance of Site

1	2	3	4	5
Limited to no maintenance. Support is needed.	Minimal maintenance is apparent – not user friendly. More support is needed.	Average maintenance – could be made more user friendly if given resources.	Effective maintenance – very user friendly with some exceptions.	Exceptional maintenance – extremely user friendly with virtually no exceptions.

Comments:

3. Overall, identify how much your depot attendants promote the program and encourage proper material separation. Promoting the program includes providing helpful information, anticipating needs etc. Accessibility is also an important factor. *This is not an employee evaluation. The purpose is to obtain feedback on how to improve the system in terms of providing more support for attendants, hiring more attendants, training etc.*

1	2	3	4	5
Somewhat promotes the program by responding to questions and helping when requested.	Promotes the program by being able to respond to all questions and concerns.	Promotes the program by being able to thoroughly respond to questions/concerns and provide further information.	Promotes the program by being able to anticipate needs and respond to them. Attendants hand-out promotional and educational literature.	Same a level 4. However, attendants go beyond disseminating information and are able to take the time to provide information/facts so people are assured their efforts are making a difference and to reinforce the importance of their actions. Attendants are kept updated on the latest program information by municipal staff and relay any relevant information to residents.
Attendant cannot always be accessible.	Attendant is somewhat accessible.	Attendant is accessible for the most part.	Attendant is always accessible with some exceptions.	Attendant is always accessible with few exceptions.
Proper material separation is not encouraged.	Proper material separation is minimally encouraged. (minimal time)	Proper material separation is somewhat encouraged. (somewhat enough time)	Proper material separation is encouraged (except for during peak traffic flow)	Proper material separation is encouraged with a high degree of effectiveness.

Appendix 3: Pilot Test Results

Background of Pilot Tests

Four of the recommendations from the Phase 2 Rural Depot Report were pilot tested in order to determine the impacts of their application. The intent was to discover if the recommendations yielded effective results when applied into practice. The pilot testing occurred from October 2006 to May 2007. A summary of the pilot tests is provided below:

Pilot Test 1: The Addition of an Extra Staff Person (page 9)

The purpose was to determine if there was a correlation between total recyclables collected and having an extra staff person to help monitor activities at the site. This pilot study took place at the Springbrook rural depot of the Township of Stirling-Rawdon.

Pilot Test 2: Testing the Effectiveness of Different Recycling Depot Layout (page 12)

Two recycling depot designs were pilot tested and compared to the traditional layout common to most recycling depots in the Quinte Region that use the '95 Gallon' carts. This pilot study mainly tested the effectiveness of the traditional labels used on each cart compared to overhead 'text only' signs, and overhead picture/graphic signs. The main purpose was to determine the most 'user friendly' layout design for depot users. This pilot test occurred at the Township of Wollaston's rural depot.

Pilot Test 3: Placement of Posters in High Traffic Areas to Promote the Recycling Depot (page 18)

The purpose is to determine the effectiveness of placing posters in high traffic areas (ex. grocery store, library) to promote the recycling depot. Depot users of the Township of Wollaston's rural depot were surveyed for this pilot test. Posters were placed in high traffic areas in Coe Hill, which is centrally located in the region served by the rural depot.

Pilot Test 4: Testing the Effectiveness of the Depot Education Manual (page 26)

An education manual was created for the depot attendants and pilot tested to determine its effectiveness and to obtain suggestions for improvement. The manual was distributed to 24 recycling depot attendants of the rural depots that participated in the study. They reviewed the manual and participated in the assessment of it.

Notes of Recognition

Quinte Waste Solutions and Stewardship Ontario would like to thank all of the depot attendants who participated in the assessment of the education manual and sharing their ideas. The valuable input they shared will be helpful for many municipalities, especially when developing communication and education material for rural depot staff. Quinte Waste Solutions will certainly incorporate this information into future outreach materials.

A special thanks is extended to Dylinna Brock, Waste Site Manager for the Wollaston Landfill and Recycling Depot, who volunteered the use of her site for two of the pilot studies. Her persistence and initiative were instrumental in completing Pilot Test 2. She volunteered to collect and compile data and observations on people's recycling depot activities for a period of nine weeks. Quinte Waste Solutions and Stewardship Ontario greatly appreciate her contribution to this study, especially her valuable insights from her observations.

Pilot Test 1

The Addition of An Extra Staff Person

Phase I Report

“A responsible depot attendant is the best defense against material contamination. An attendant who promotes the program and encourages proper material separation contributes to the program’s success and increases its perceived and actual effectiveness. This in turn, results in higher community participation and overall capture rate. The provision of the attendant also supports mandatory recycling by-laws and/or user pay programs as the attendant can regulate and monitor inbound material”.¹

Description of Pilot Test: An extra staff person was hired by the Township of Stirling Rawdon to assist the depot attendant at the Springbrook waste site. This was an ideal site to pilot test because it had only one depot attendant to supervise the landfill, scrap piles, recycling depot, and collect user fees from the public.

Purpose: The purpose was to determine if there is a correlation between total recyclables collected and having an extra person to help monitor activities at the site.

Timeline:

The start date for the extra staff person was October 1, 2006. Recycling tonnage data for that depot was collected from October 1, 2006 to the end of May 2007, and compared to the same time period for the previous year.

Methodology:

The main assessment to evaluate the impact of an extra staff person was to compare the total recycling tonnage collected in the 8 months following the start date of the new depot attendant with the total recycling tonnage collected during the same time span from the year.

Description of Findings

An extra staff person started at the Springbrook waste site on October 1, 2006. Previously, the site had one depot attendant to manage the recycling depot, landfill, and scrap pile, in addition to collecting user fees. The recycling tonnage data was collected for the following 8 months after the staff person was hired, and compared to the recycling tonnage collected in the same months of the previous year. The recycling tonnage did increase after the extra staff person was hired. Please refer to the chart below, which displays the monthly recycling tonnages collected.

Recycling Collected from the Springbrook Waste Site in Metric Tonnes

Date	Weight (MT)	Date	Weight (MT)	Percentage Increase
October 2005	6.79	October 2006	7.32	+ 7.8%
November 2005	5.96	November 2006	7.09	+ 19%
December 2005	7.81	December 2006	9.05	+ 15.9%
January 2006	6.00	January 2007	6.35	+ 5.8%
February 2006	6.34	February 2007	4.64	- 2.7%
March 2006	6.28	March 2007	6.54	+ 4.1%
April 2006	6.45	April 2007	7.21	+ 11.8%
May 2006	7.12	May 2007	8.74	+ 22.8%
Total	52.75		56.94	+8%

The total recycling tonnage for the 8 months (October 2006 – May 2007) following the addition of an extra staff person increased by 8% over the previous 8 month period ending in May 2006, as displayed in the chart above.

¹ SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 31 Para. 6.

Total Recycling Collected over the Past 3 Years

8 month Period	Total Recycling Tonnage Collected (metric tonnes)	Total Increase or Decrease from the Previous Year (metric tonnes)	Percentage Change from the Previous Year	Percentage Change when Comparing Results from each Year to Pilot Test Year
One depot attendant				
October 2003 – May 2004	51.91			
October 2004 – May 2005	55.13	3.22	6%	3.3%
October 2005 – May 2006	52.75	(2.38)	(4.3%)	7.9%
Pilot Test – Additional depot attendant				
October 2006 – May 2007	56.94	4.19	7.9%	

According to the chart above, the total amount of recyclables collected over the 8 month pilot (October 2006 – May 2007) resulted in a 3.3% and 7.9% increase compared with similar time periods for the two previous years.

The test results suggest that the additional depot attendant helped to increase the amount of recyclables collected at the depot. The addition of an extra staff person had a positive impact on Springbrook’s depot recycling program. The benefits are summarized as follows:

- Increased time to monitor activities at the recycling depot
- A significant improvement in the appearance of the site
- More time devoted to helping people with recycling, including proper sorting.

Increased time to monitor activities at the recycling depot

Monitoring recycling depot activities is crucial because it improves compliance. The new depot attendant was able to monitor recycling depot activities and assist residents. This freed up more time for the other depot attendant to collect user fees and assist residents without the risk of leaving the recycling depot unattended. More effort was not devoted to monitoring the garbage for recyclables because most of the staff time was consumed by monitoring the activities of the recycling depot and collecting user and disposal fees in addition to assisting residents, maintenance duties, and overseeing the scrap pile.

A significant improvement in the appearance of the site

The site appeared to be more organized when visited March 31 2007, compared to the first visit in August 2006 when there was only one depot attendant. This is due to the fact that more staff was needed during the first visit. The sole depot attendant was juggling several duties. It was observed that most residents did not purchase ‘bag tags’ prior to arriving, so collecting user fees was very time consuming. The attendant also had a section for reusable items. A trailer was completely stuffed full of used items, which were placed in a haphazard fashion. This made it difficult for depot users to locate materials they wanted and it was not a safe set-up for the public to use. The following picture was taken of the reuse section in August 2006, before the extra staff person was hired.



The depot attendant simply did not have enough time to organize the materials and arrange for a user-friendly design layout. The site appeared more organized during the second visit and the used item trailer was cleared of any excess junk and arranged in a user-friendly manner. This would not have been doable without the extra staff person.

More time devoted to helping people with recycling, including proper disposal.

The addition of an extra staff person allowed more time to be devoted to assisting residents. A depot attendant was always observed to be actively helping people with their recycling. The tracking of user fees collected was also improved as the attendants had time to keep records as the transaction occurred. In contrast, the former depot attendant could not always be available to assist people with recycling because a significant amount of time was consumed with other duties. Although data is not available, the level of contaminated recyclables should be improving now that one of the depot attendants is consistently available to monitor recycling depot activities and help people with their recyclables.

Overall, these benefits provide a more pleasant experience for the resident. The increased monitoring, and improved site appearance and customer service, enhances the public's perception of the program. A positive perception encourages community participation and leads to improved program effectiveness. It is not surprising that recycling tonnage increased after the addition of an extra staff person.

Pilot Test 2

Testing the Effectiveness of Different Recycling Depot Layout Designs

Phase I Report

“Ensure the site is well maintained to reduce contamination and to increase participation from the public”.²

Description of Pilot Test: Two recycling depot designs were pilot tested and compared to the traditional layout common to most recycling depots in the Quinte Region that use the ‘95 Gallon’ carts. Dylinna Brock, Waste Site Manager for the Wollaston landfill and recycling depot, collected the data and compiled observations for this pilot test.

Purpose: The main purpose was to determine the most ‘user friendly’ layout design for depot users.

Methodology: Two recycling depot designs were pilot tested to determine if they improve the quality of recycling. The level of recyclable contamination (recycling errors - per customer car and per cart) was tracked on a weekly basis and compared for each new layout style and the traditional layout common at most recycling depots in the Quinte Region. The traditional approach involves providing a continuous row of ‘95 Gallon’ carts with no physical dividers between each category of recyclables. Each cart has a label located on the inside of the lid, which identifies the type of recyclables collected.

Example of a Text Label used on the Lid of a ‘95 Gallon’ Cart



The pilot test was 9 weeks in duration (a different layout design was tested each week). Each new layout was tested for three weeks and compared with the traditional layout also tested for three weeks. The following new layouts were tested:

‘Text Only’ Sign: The labels on each cart were removed. Two overhead signs were used, each representing a different category of recyclables. Each sign contained a text list of all recyclables collected for that category. A physical divider was used between the two categories of recyclables. Please see below for a sign sample.

² SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 32, Para.3.

Picture/Graphic Sign: The labels on each cart were removed. Two overhead signs were used, each representing a different category of recyclables. There was a combination of text and supporting graphics on each sign, representing the recyclables collected for that category. Although graphics were mainly used, one of the signs contained a picture as well. A physical divider was used between the two categories of recyclables. Please see below for a sign sample.

Please note that the main difference between all of the layouts was the sign used. The traditional layout differed from the other two layouts because it did not contain a physical divider to separate each category of recycling carts, and it had text labels for each cart instead of one sign for each category of recyclables. *The two other layouts tested will be referred to as 'signs' instead of 'layouts' because the main difference between them is the type of sign used.*

'Text Only' Signs Used for Pilot Test



Picture/Graphic Signs Used for Pilot Test



Timeline:

The duration of this pilot test was 9 weeks:

Week 1 (March 5 to 11) – ‘Text Only’

Week 2 (March 12 – 18) - Traditional

Week 3 (March 19 – 25) – Picture/Graphic

Week 4 (March 26 – April 1) – ‘Text Only’

Week 5 (April 2 – April 8) – Traditional

Week 6 (April 9 – April 15) – Picture/Graphic

Week 7 (April 16 – April 22) - ‘Text Only’

Week 8 (April 23 – April 29)– Traditional

Week 9 (April 30 – May 6) – Picture/Graphic

As part of the assessment, the average number of recycling errors per car was determined for each layout. This was calculated by dividing the total number of recyclables misplaced by the number of cars that stopped to use the recycling depot during the test time for each layout. In addition, the average number of recycling errors per ‘95 Gallon’ cart was determined for the last 6 weeks of the 9 week test. This information could not be tracked for the entire 9 weeks due to resource limitations. A ‘95 Gallon’ cart being emptied into a QWS truck is displayed in the picture below.



Choice of Pilot Test Site

The Wollaston recycling depot was chosen for the site of this pilot test because the attendants perform all of the sorting for the public. When the recycling program was introduced, the attendants chose this procedure in order to encourage people to bring their recyclables to the depot instead of discarding in garbage. The public has not been trained to independently sort recyclables. As such, they formed the most suitable population segment for testing the effectiveness of different layouts including signs. Their response should provide a more direct reflection of the layout's effectiveness because they relied solely on the directions provided by the layout and not on prior knowledge of sorting recyclables.

Results of the Pilot Test

The layout with the graphic/picture signs had the most positive reception. In comparison to the traditional layout, it had 61% less recycling errors per car. The 'text-only' sign did not perform as well with only 3% less recycling errors per car.

Number of Errors per Car - Results of Traditional Layout Test

Date	# of Cars	# of Contaminants	# of Errors Per Car
March 12 – 18	90	118	1.30
April 2 – April 8	70	70	1.00
April 23 – April 29	75	56	0.75
Total	235	244	1.04

Number of Errors per Car - Results of 'Text Only' Sign Test

Date	# of Cars	# of Contaminants	# of Errors Per Car
March 5 – 11	83	183	2.20
March 26 – April 1	100	67	0.67
April 16 – April 22	100	37	0.37
Total	283	287	1.01

Number of Errors per Car - Results of the Picture/Graphic Sign Test

Date	# of Cars	# of Contaminants	# of Errors Per Car
March 19 – 25	74	59	0.80
April 9 – April 15	100	38	0.38
April 30 – May 6	75	6	0.08
Total	249	103	0.41

The results are even more dramatic when examining the number of errors per '95 Gallon' cart. In comparison to the traditional layout test results, the picture/graphics sign test had 73% less errors and the 'text only' sign test had 49% less errors.

Number of Errors Per Cart – Traditional Layout Test

Date	# of Carts	# of Contaminants	# of Errors Per Cart
April 2 – April 8	23	70	3.04
April 23 – April 29	22	56	2.55
Total	45	126	2.80

Number of Errors Per Cart – ‘Text Only’ Sign Test

Date	# of Carts	# of Contaminants	# of Errors Per Cart
March 26 – April 1	36	67	1.86
April 16 – April 22	36	37	1.03
Total	72	104	1.44

Number of Errors Per Cart – Picture/Graphic Sign Test

Date	# of Carts	# of Contaminants	# of Errors Per Cart
April 9 – April 15	27	37	1.37
April 30 – May 6	29	6	0.21
Total	56	43	0.77

Observations

The depot attendants provided feedback based on their observations. People were very frustrated with the traditional layout because it did not have a physical divider. This can be very confusing for the user because it is difficult to determine where one category begins or ends. Unlike the traditional layout being tested, the original layout for this site had a physical divider (table), which people used to place their blue boxes while attendants helped them to sort. Even though the table was located in close proximity to the traditional layout being tested, some residents were annoyed with the change in its location. They liked it located between the 2 categories. A few people were frustrated with reading the labels. One gentleman left upset because he did not want to read them. Some people were confused about certain items listed on the labels, such as the meaning of tetra pak or rigid plastic.

The physical divider may have contributed to the success of the ‘text only’ and picture/graphic sign tests. Although both did better than the traditional layout test, the picture/graphic sign test had better results compared to the ‘text only’ sign test. In fact, it had 59% less recycling errors per car than the ‘text only’ sign test results. It also had 47% less recycling errors per cart.

According to the general observations made by the depot attendants, people avoid looking at the signs when sorting their recyclables. Instead, they peek inside the container to determine what goes in them. Despite this tendency, the picture/graphic signs seemed to draw their attention. Many people voluntarily commented on why they preferred these signs. It is easier for them to process the sign’s information in less time. One resident stated that, “The use of pictures is a fast way to get the message across”. It also serves as a reminder for items that people tend to place in the wrong recycling category. Another resident commented that the picture/graphic signs provide clarification of certain terms used. For example, he was not clear on the term tetra pak. When he saw a picture of a tetra pak box on the sign, he immediately understood. The depot attendants reported that many people are confused about the term tetra pak, especially when the picture/graphic signs are not used. This is not surprising since many depot attendants are not sure on how to handle them, as indicated from the results of Pilot Test 4, which tested the effectiveness of the Depot Attendant Education Manual.

Benefits of a Picture/Graphic Sign based on Depot Attendant Observations and Data Collection

- A significant reduction in recycling contamination
- People look at it more than the ‘text only’ sign
- The picture/graphics help some people process the information faster
- Some residents may not be adept readers for a variety of reasons, so picture/graphics are helpful.

- The picture/graphics serve as a reminder for items that people tend to place in the wrong recycling category
- It helps ensure that people understand the meaning of each item listed (ex. tetra pak)
- Having one large picture/graphic overhead sign for each category is less overwhelming than having labels placed on each cart.

Suggestions for Picture/Graphic Sign

More pictures representing Styrofoam: One picture of a foam cup was used to represent Styrofoam. Some people did not recognize it for other Styrofoam items that can be recycled. People started to have difficulties because they assumed that other Styrofoam items may not be recyclable.

Limitations of Pilot Test

The depot attendants found it challenging to implement the changes for the pilot test. Unlike most recycling depots, this recycling depot had a physical divider between sections. Many people were annoyed when the divider was moved in order to replicate the traditional site layout. It was still available but in a different location. Many people did not like the change of routine, especially having to independently sort recyclables. A few people dropped off their recyclables and refused to sort in retaliation. In these cases, the depot attendants did not count these in the study because the behaviour was triggered by the change and not by the layout being tested.

The results could have been affected by people reacting to the change as each layout was introduced for the first time. For this reason, the pilot test was completed over 9 weeks instead of a shorter term. Much appreciation is extended to the depot attendants who assumed the extra duty of data collection during this time-period.

Closing Remarks

Overall, the pilot test results reveal that having a sign with pictures/graphics is significantly more effective than 'text-only' signs or labels. Despite the fact that some people struggled with the change of being forced to sort recyclables on their own, the picture/graphic sign had a positive reception. The physical divider used to distinguish between each category section, added to the site's 'user-friendliness'.

It is evident that a layout with overhead signs and dividers distinguishing between each category section is much more effective than a continuous row of individually labeled carts with no dividers. This 'sea of labels' can be overwhelming. The manager of the waste site kept a running log of her observations during the pilot test. At one point, she communicated people's dislike for the traditional layout;

"People do not like this system. I am convinced that if we continued with this system, our recycling rates would go down. There is nothing 'user friendly' about this system".

Although signs proved to be more effective than labels, the picture/graphic signs prevailed over the 'text only' signs. It had 59% less recycling errors per car and 47% less recycling errors per cart.

Unfortunately, municipalities are faced with budget constraints and picture/graphic signs may cost almost double the price of text signs. However, the cost per sign decreases once the original design template is created. The results of this pilot test indicate that picture/graphic signs are a worthwhile investment for reducing recycling contamination.

Pilot Test 3

Placement of Posters in High Traffic Areas to Promote the Recycling Depot

Recommendation from the Phase I Report

“Increase capture rate of existing Blue Box material by promoting the depot program in high traffic areas (ie. waste disposal site, grocery store, convenience stores, seasonal bait shops, hardware stores, libraries, schools, banks, post offices etc.)”³

Description of Pilot Test: Posters were placed in high traffic areas in Coe Hill, which is centrally located in the region served by the Township of Wollaston’s landfill and recycling depot. The posters were intended to inform the public of recycling depot hours and location. Please see below.

**Cut down on Garbage
Going to Landfill
Stop before you Toss
It could be Recyclable!**

Recycle at the Wollaston Waste Site

Hours of Operation

November 1 to April 30

Days: Wednesday, Friday, Saturday, Sunday **Hours:** 9:00am to 4:00pm

May 1 to October 31

Days: Monday, Wednesday, Friday, Saturday

Hours: 9:00am to 4:00pm

Sunday is also open from 9:00am to 5:00pm

Directions:

- Turn onto Lower Faraday Road from Hwy. 620.
- Keep driving until you reach a fork in the road – do not veer to the road on the right.
- Drive straight up the road.
- The waste site is located up the hill on the right side of the road.

³ SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 31, Para. 3.

Purpose: The purpose was to determine the effectiveness of placing posters in high traffic areas to promote the recycling depot. It is important to take into consideration that the pilot test occurred during off-season. The pilot test would have been more relevant in high season because there are more non-permanent residents in the area.

Methodology and Timeframe:

Friday December 22, 2006

On December 22, 2006, posters were posted in the following venues:

Venue	Location
Wannamaker's Grocery Store Highway 620, Coe Hill 613-337-5741	The owners do not place posters on the doors. They offered the bulletin board but it was located in a low traffic area and was cluttered with papers. The owners made an exception to place the poster at the Lottery Centre.
LCBO Highway 620, Coe Hill 613-337-1100	A poster was placed on both sides of the glass foyer of the LCBO. This enabled people to see the poster in the front foyer as well as inside the store. No other posters were around it.
Post Office Highway 620, Coe Hill 613-337-5787	Posters can only be placed on the outdoor bulletin board. It is not very cluttered.
The Hideaway Restaurant Highway 620, Coe Hill 613-337-8662	The owners placed it at the front entrance with other brochures, until their New Year's Eve event.
Coe Hill Country Market Gas Station Highway 620, Coe Hill 613-337-8754	Poster was placed on the door inside the store.
Wollaston and Limerick Public Library Highway 620, Coe Hill 613-337-5183	Poster placed on library door.
Township of Wollaston Office Coe Hill 613-337-5731	Poster was provided to Marilyn Brickles, the Clerk of Wollaston Township.
Coe Hill Country Kitchen Highway 620, Coe Hill 613-337-8787	The restaurant was closed so the store clerk at the LCBO agreed to give the poster to them when they were open.

Friday January 5, 2007

A survey was conducted by Allison Ross at the Township of Wollaston's landfill and recycling depot. During the course of the day, she asked 60 customers about their residency status and if they had noticed the posters.

Results of Pilot Test

The pilot test findings revealed that the posters had little to no effect in prompting people to recycle and the vast majority of people did not notice them. Only 8 of the 60 people surveyed saw at least one of the posters. 35 people simply did not notice the poster while 17 people did not see the posters because they were not shopping in Coe Hill during that time period (14 of these people shop elsewhere).

All of the people who saw the posters were permanent residents with the exception of one cottager. The permanent residents indicated the sign did not prompt them to recycle because they already do so. The cottager was the only person who communicated that it prompted her to recycle.

The Design of the Poster

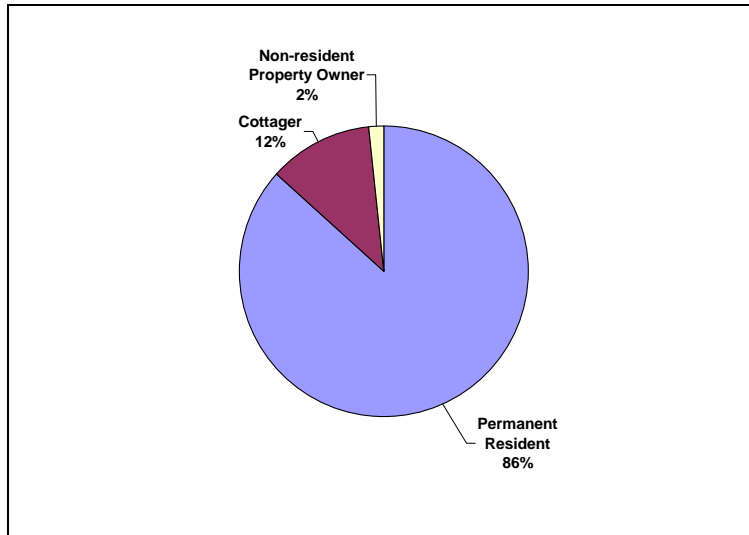
The poster was designed to inform people of the rural depot and prompt them to recycle. It was printed on yellow and blue pieces of laminated paper. It contained text, which included a slogan and relevant information regarding the rural depot. More people may have spotted the poster if it contained eye-catching graphics. However, there was minimal room for graphics because the poster was 8.5 by 11. This size was chosen because many of the venues have bulletin boards and limited space for posters. Having a larger sign may deter venues from agreeing to post it. Also, a standard 'text only' poster was chosen for the pilot test because it cannot be assumed that all municipalities are going to invest the time and resources into making an eye-catching graphic poster.

Study Limitations: The majority of people who did not see the poster reported that they simply did not notice it. Perhaps some of them did see it but cannot remember. If a recycling icon were placed on the sign, more people might recall the sign due to brand recognition.

Overview of Findings

Residency Status

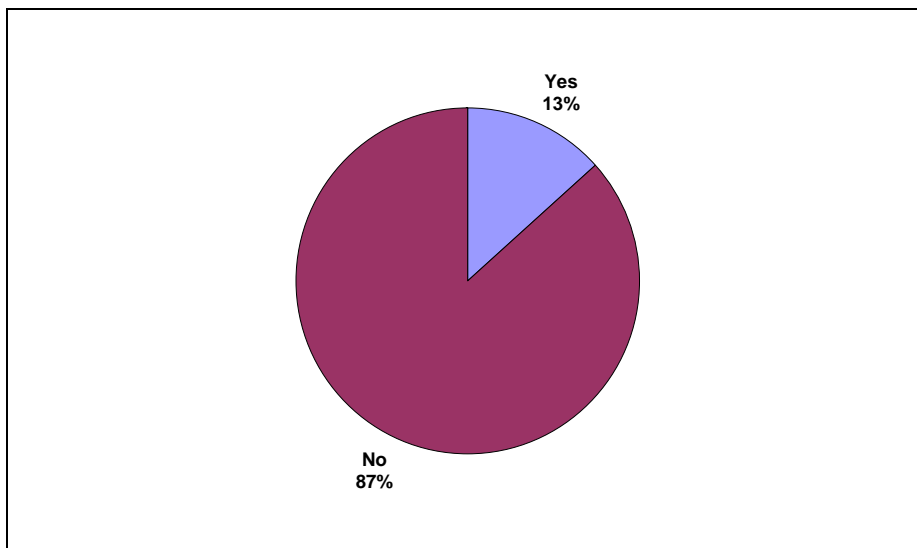
Permanent Resident: 52 people
Cottager: 7 people
Non-resident Property Owner: 1 person



Did you see the sign?

Yes: 8 people (only one of these people was a cottager)

No: 52 people



Where did you see the sign?

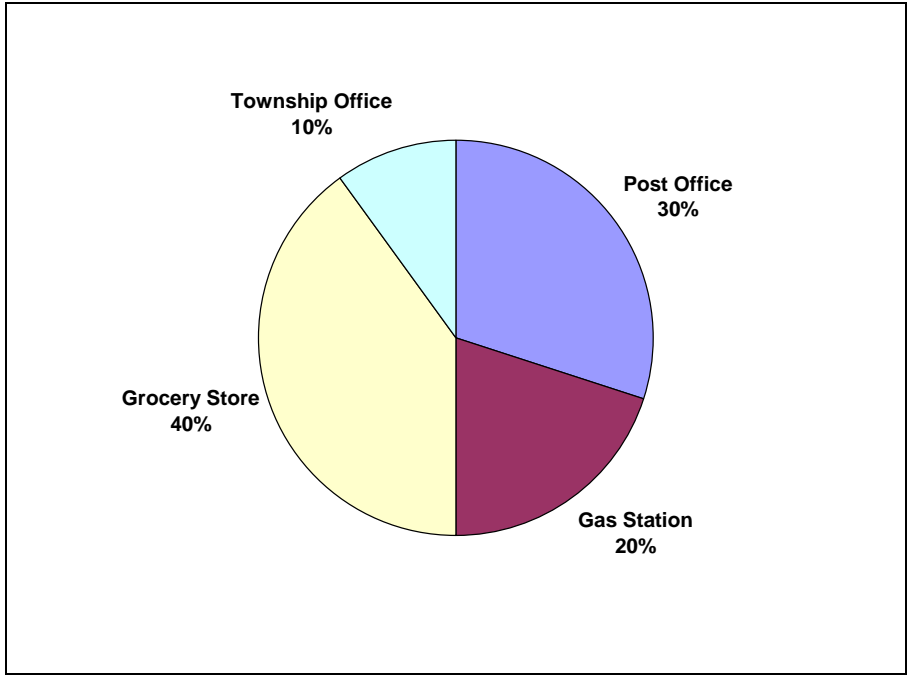
Post office: 3

Gas station: 2

Township Office: 1

Grocery Store: 4

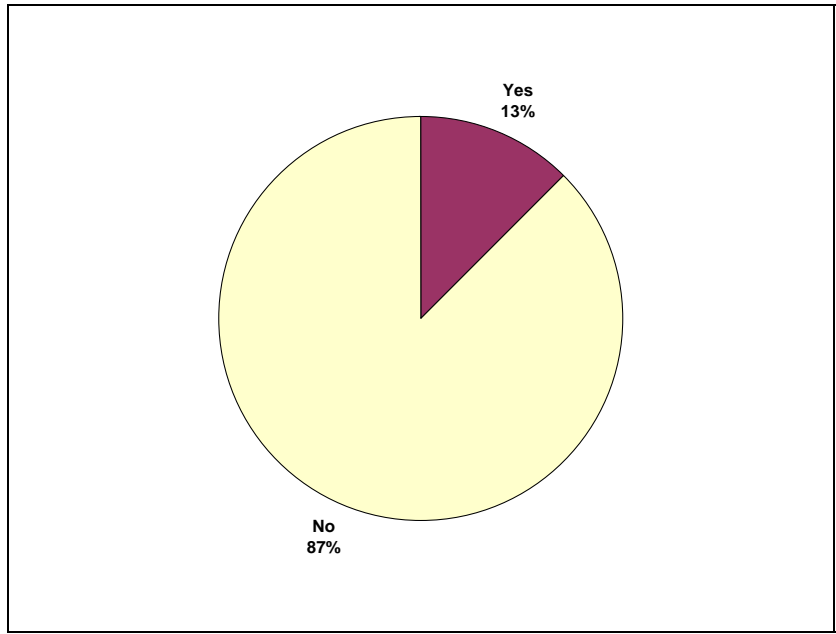
(one of these people is a cottager)



If you saw the sign, did it prompt you to recycle?

No: 7 people

Yes: 1 (a cottager)



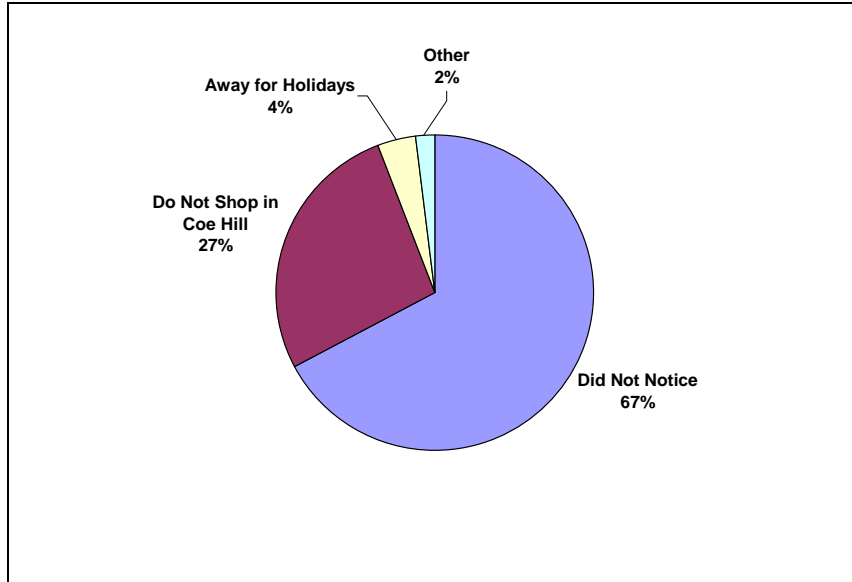
Why did you not see the sign?

Did not notice: 35 people

Do not shop in Coe Hill: 14 people (two of these people said they 'usually' do not shop in Coe Hill)

Away for holidays: 2 people

Other: 1 person (went straight to cottage, has not been to Coe Hill yet)

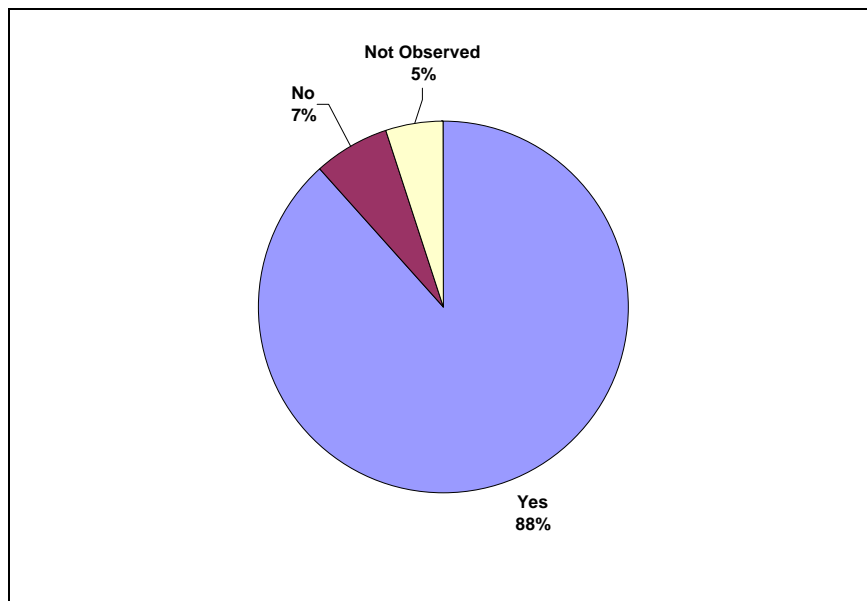


Were customers observed recycling at the site?

Yes: 53

No: 4

Not observed: 3



Feedback from Permanent Residents

Permanent residents tend not to observe signs because they already know the schedule and routines of the area. They contact the township office or rely on word of mouth when they are unsure of something. Posters may be useful for permanent residents when communicating any changes such as holiday hours. It is not surprising that most people did not notice the signs given that 86% of the people surveyed were permanent residents. Only 1 of the 8 people that saw the posters was prompted to recycle. This person was a cottager, which indicates the possibility that promoting the depot in high traffic venues may be an effective way to reach cottagers and tourists. However, this is only an assumption and should be tested during peak season, when most non-residents use the recycling depot. Other methods of reaching cottagers should also be considered and pilot tested such as direct mail, placing advertisements in local newspapers during peak season, and hiring summer students to distribute information directly to the cottages.

The general consensus was that most permanent residents already know the hours of the waste site, so they do not need to rely on posters for information. They learn about changes from 'word of mouth' and they go to the Township office if they have any questions. In fact, 'word of mouth' is so strong that people are already discussing their concerns about the closing of the waste site, even though nothing was decided or announced yet. During the survey, several people asked when the waste site will be closing. People hear something about an issue and it spreads throughout the community rapidly, even if it is not accurate. Some of these communities have tight social connections. Although 'word of mouth' is a powerful way to send out a message, the information may not always be accurate due to misinterpretation etc. Posters would be useful for communicating changes to permanent residents such as changes in hours for the holiday season.

Feedback from Cottagers

Tourists and cottagers rely on 'word of mouth' when they ask the local people about waste site location and hours. Only one of the seven cottagers saw the poster. They saw it in the grocery store and said that it prompted them to recycle. The rest of the cottagers did not see the posters for several reasons:

- They are already aware of the hours and location, so they do not have a need to notice the posters
- They do not shop in Coe Hill while at the cottage. They usually shop in their hometown or Bancroft.
- They did not have a chance to stop in Coe Hill while at the cottage.

Out of the 6 cottagers who did not see the sign, 3 of them simply did not notice, 2 of them do not shop in Coe Hill (shop in Bancroft or hometown) and one was going to the cottage for a short time and did not get a chance to stop in Coe Hill.

Barriers to Noticing Posters

- People already know the hours of operations of public places including the waste site, so they do not rely on posters for information.
- Some locations are cluttered with posters, so people do not bother reading them.
- People are bombarded with advertisements everyday so they may neglect to read posters due to information overload.
- Some people do not shop in Coe Hill because of more preferable options elsewhere.
- Some of the non-residents may not have a reason to shop in Coe Hill. For example, cottagers and property owners that do not reside in Coe Hill may do their shopping in their hometown or elsewhere.

Effectiveness of Posters

The effectiveness of placing posters in high traffic areas to promote the recycling depot is questionable given that most people did not even notice the signs posted. This may be due to the fact that people already know the waste site location and hours and are not concerned with looking for information on posters. Also, posters lose their effectiveness when people are already bombarded with information from advertisements etc. Some retail stores do not allow posters to be placed on doors or windows. As a result, some posters end up being placed with a clutter of other materials on a bulletin board etc.

People still did not notice the posters even when they were placed in highly visible areas without the presence of other posters to detract from them. For example, a poster was placed on both sides of the glass foyer of the LCBO. This enabled people entering and exiting the store to see the poster in the front foyer as well as inside the store. Despite its prime location and there were no other posters around it, none of the people surveyed noticed it!

Given that 87% of all people surveyed did not notice the posters and only one of the seven cottagers saw them, it can be assumed that a small percentage of cottagers and tourists will see the posters when visiting during the summer. However, this is only an assumption. In order to determine if posters are effective in reaching tourists and cottagers, the pilot test should be **conducted during peak season** when there are more people to survey from this population segment. It is important not to overlook the fact that the only cottager who saw the poster said that it prompted them to recycle. This indicates the possibility that promoting the depot in high traffic venues may be an effective way to reach cottagers and tourists.

If posters are to be used for promoting the waste site, the venues should be carefully selected. This involves understanding the shopping dynamics of the people. What may appear to be a high traffic venue may not actually be so in reality. Despite the survey findings, placing posters is still a way to capture people who may forget the waste site hours for whatever reason or non-permanent residents who may not be aware of the location and hours. Also, cottage owners only get one waste site card listing hours of operation so not all family members and guests will have immediate access to this information. Posters are also useful for reminding people of waste site changes such as seasonal hours.

Many people communicated that they obtain waste site information from their tax bill and waste site card. While placing posters in high traffic venues should not be the main source of promotion, it should be done to complement the primary methods of communication.

Further Research

Various strategies for reaching the seasonal population should be considered and pilot tested. Examples of possible outreach strategies to pilot test include using direct mail to disseminate information to the seasonal population, advertisements in local newspapers during peak season, and hiring summer students to distribute information materials door to door for cottagers.

Pilot Test 4

Testing the Effectiveness of the Depot Attendant Education Manual

Phase I Report

“A responsible depot attendant is the best defense against material contamination. An attendant who promotes the program and encourages proper material separation contributes to the program’s success and increases its perceived and actual effectiveness. This in turn, results in higher community participation and overall capture rate”⁴.

Description of Pilot Test

Refer to Appendix 10 for a sample of the education manual that was prepared for depot attendants. It contains information on what can and cannot be recycled, how to handle certain recyclables, contamination of recyclables, how to deal with an overflow of recyclables, the lifecycle of recyclables, relevant regulations, an outline of ‘who to call for what’, an overview of the ‘Big Picture’ of recycling with a brief explanation of relevant groups such as Waste Diversion Ontario and Stewardship Ontario, and a listing of helpful web sites. The contents of the manual were informed by the depot attendants who identified their information needs during the in-depth interviews conducted in August 2006.

Once the education manual was distributed and reviewed, the depot attendants were consulted about the manual’s effectiveness as an education tool. They were asked to complete a Feedback Form, an optional Confidential Question, and a Depot Attendant Quiz, which are included in Appendix 11.

Timeframe

Depot attendants were given at least two weeks to review the manual. Then they were provided with a feedback form to complete and were asked to participate in a quiz relating to the contents of the manual. This occurred in February and March of 2007.

Purpose

The purpose of this pilot test is to determine the effectiveness of the education manual and obtain suggestions for improvement. The feedback form helped to determine what the attendants found useful and gather ideas on how to cater more to their needs. The depot attendants were given a quiz with questions that directly related to the contents of the manual. The goal was to assess the effectiveness of the manual by determining what sections of the manual successfully conveyed the information and what sections did not. The quiz results would also help identify areas that needed more education.

Methodology

An education manual was distributed to each depot attendant by mail. Most of the depot attendants had at least 2 weeks to read it. Allison Ross, Special Projects Coordinator with Quinte Waste Solutions, followed-up with the attendants after they reviewed the manual, and surveyed them about the contents.

Summary of Findings in Point Form

Usefulness of Education Manual:

71% of the 24 depot attendants surveyed deemed the education manual to be ‘useful’ or ‘very useful’. 21% of attendants found it ‘somewhat useful’ and 8% referred to it as ‘not useful’.

How much of the Education Manual was Read?

63% of the 24 depot attendants ‘thoroughly read’ the manual or ‘thoroughly read the manual and reviewed it again’. 25% read ‘most of it’, 4% read ‘less than half of it’, and the remaining 8% did not read it.

⁴ SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 31, Para.6, Line 1- 3.

How easy was the Education Manual to Read?

78% of depot attendants found it to be 'no problem' to read or 'very easy' to read. 13% found it 'very challenging' to read, and 9% found it 'somewhat challenging'.

Most Popular Section of the Education Manual:

The favourite section was the chart on what can and cannot be recycled. The section explaining the lifecycle of recyclables was also popular. Some attendants suggested that these sections be continually updated.

General Consensus:

Most depot attendants felt it served as a good reference tool for seasoned and new staff.

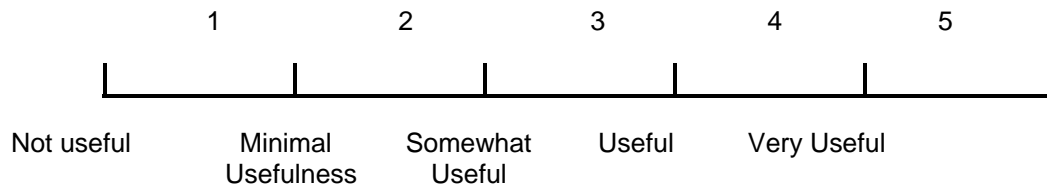
Outline of Detailed Findings

Detailed findings are outlined in the following format:

1. Results of the Feedback Forms
2. Depot Attendant Input from the Comment Sections of the Feedback Forms
3. Results of the Confidential Question
4. Feedback from Municipal Office Staff
5. Suggestions
6. Areas that Need More Education: Results of Depot Attendant Quiz

Results of the Feedback Forms

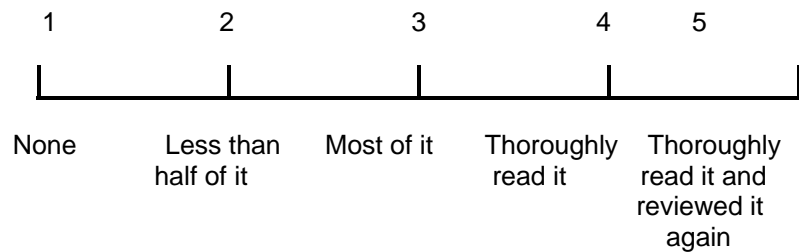
Overall, there was a positive reception of the education manual by the depot attendants. Please refer to Appendix 11 for a sample of the Depot Attendant Feedback Form. As part of this feedback form, they were asked to rank the education manual using the following scale:



The average and median ranking was level 4, deeming it as 'useful'. The chart below provides a summary of rankings.

Ranking Level	Total Responses for Each Ranking	Percentage of Total Responses
1	2	8%
2	0	0%
3	5	21%
4	11	46%
5	6	25%
Total Responses	24	100%

Depot attendants were asked to indicate how much of the education manual they read using the following scale.



The average and median ranking was level 4, revealing that they thoroughly read the education manual. The chart below displays all of the responses.

Ranking Level	Total Responses for Each Ranking	Percentage of Total Responses
1	2	8%
2	1	4%
3	6	25%
4	6	25%
5	9	38%
Total Responses	24	100%

Depot Attendant Input from the Comment Sections of the Feedback Forms

The depot attendants received little to no formal training despite their desire for it. The following statement made by one of the waste site managers reflects the situation of most depot attendants;

“ Any information is always helpful. Attendants are very often left out of the loop because they generally work in isolation”.

The vast majority of depot attendants expressed great appreciation for the education manual and thought it served as a good reference tool for seasoned and new employees. The most popular section was on how to deal with certain ‘grey area’ items and a list of what to recycle and not to recycle. ‘Grey area’ items are products, which provide a challenge to attendants in terms of how to dispose of them. The marketplace is bombarded with new products and this can be overwhelming for the depot attendant. The disposal options for these ‘grey area’ products are not immediately apparent. Approximately 15 of the 24 attendants pointed out the benefits of the ‘grey area’ items section.

At least 7 of the depot attendants expressed appreciation for the section on the lifecycle of recyclables. In fact, depot attendants at one of the sites took the initiative to photocopy this section of the manual and distribute it to the residents. They said that it generated great interest from the public. They also now have an enlarged laminated copy posted on the wall of the depot, which has attracted attention from the public. Judging from the public’s response, it would be worthwhile for a municipality to invest in eye-catching posters, which visually display the lifecycle of recyclables.

Results of the Confidential Question

It cannot be assumed that the education manual was easy to read because the majority of attendants either said they 'read most of it', 'thoroughly read it', or 'thoroughly read it and reviewed it again'. For this reason, depot attendants were asked to communicate if the manual was easy to read through or not. They were given a confidential question, which was optional. Once completed, the attendant placed the response in an envelope unsigned. Please refer to Appendix 11 for a copy of the question.

78% found it to be 'no problem to read' or 'very easy to read'. The rest of the depot attendants indicated some degree of challenge in reading it. All of the responses are detailed in the chart below.

Selection	Total Responses for Each Ranking	Percentage of Total Responses
1 – Somewhat challenging	2	9%
2 – No Problems	8	35%
3 – Very Challenging	3	13%
4 – It Could Not be Read	0	0%
5 – Very Easy to Read	10	43%
Total	23	100%

It is important to note that at least 5 of the attendants surveyed had some difficulty with reading. This is a sensitive issue and should be acknowledged when preparing an education manual. An alternative manual should also be prepared which has less text yet still contains the essential information. This highly visual form of the manual could serve as a quick reference tool for all depot attendants.

Feedback from Municipal Office Staff

Municipal office employees were given samples of the education manual. Employees from three municipalities, including two CAO's and a depot attendant supervisor, took the time to provide some feedback on the education manual. They thought it was a valuable resource for training new staff. The manual's contents serve as useful reference material for municipal staff that handle public inquiries about recycling. Excerpts from their feedback are included below:

"Easy to read, not a lot of extra fluff. Well done".

"The booklet will be used as a valuable reference in handling questions/concerns from the general public. Again, the accessibility of contact information is extremely beneficial".

"Well written and includes answers to a lot of the telephone and over-the-counter questions. Will also be a great teaching aid for new staff".

It would be beneficial to consider providing the manual or parts of it to municipal office staff. They may benefit from information such as web sites and contact information. However, the need for such information will vary from municipality to municipality. Some offices may handle all waste management questions and other offices may refer public inquiries directly to Quinte Waste Solutions or the Public Works Department.

Suggestions

It is advised to provide the education manual directly to depot attendants in person. Not only will they appreciate the visit, providing the manual directly will ensure timely distribution.

Most of the education manuals were sent to the municipal or township offices by mail. Employees at the municipal offices were asked to distribute them to the depot attendants. This was a time consuming process, despite follow-up calls to municipal staff. Some depot attendants did not receive the manual until over one month later. The fact is that municipal employees are very busy with other priorities. In some cases, there is staff changeover making it challenging to track mailings. It is best to distribute the education manuals directly to the depot attendants in person.

Provide an alternative manual to serve as a 'quick reference' guide. This alternative form should contain essential information with less text compared to the original version. It is crucial to have this alternative form in order to reach all depot attendants.

Some depot attendants may not be adept at reading, so this must be taken into consideration. The alternative form could be used as a quick reference guide for all depot attendants.

The following are a list of suggestions stated by some of the depot attendants:

- The manual would have been more useful when they first started the job. This should be provided to all new staff.
- A list of items that belong in the fibrous category of recyclables and non-fibrous category would be helpful.
- The 'Grey Area Recyclables' section and the list of what can and cannot be recycled should be updated on a continual basis.
- The first point in the general questions section refers to the Beside/Inside card (gives helpful recycling tips) but does not give the location of it. This is problematic because attendants do not know what this card looks like or its location. The manual should clearly refer to its location at the back of the education manual.

Depot attendants suggested other items that the manual should address:

- small planting trays that are all connected
- prescription containers, non-prescription containers such as for cough syrup and vitamins
- bubble wrap
- textiles – why are they not recyclable?

Suggestions Addressing the Manual's Form

The attendants were asked the following survey question:

For the sake of keeping the manual short in length, visuals were not added in the training manual. Please circle the letter of the answer that best describes **your needs in a manual**.

- a) the manual must have some visuals
- b) the manual must have an equal balance of text and visuals
- c) the manual must consist mainly of visuals
- d) a text only manual is fine
- e) a text only manual is fine as long as it has the QWS recycling sheet (this sheet is presently included at the back of your manual and contains graphics)

Approximately one third of depot attendants mentioned that a 'text-only manual is fine' and another one third of attendants felt that the manual 'must have an equal balance of text and visuals'. One quarter of the attendants said that a 'text only manual is fine, as long as it has the QWS info recycling sheet'. Only 4% shared that the manual 'must have some visuals' and just over one tenth felt that it 'must consist mainly of visuals'. The following chart outlines the survey results to this question.

Suggestions for Manual	Total Number of Respondents	Percentage of Respondents
Must have some visuals	1	4%
Must have an equal balance of text and visuals	7	29%
Must consist mainly of visuals	3	13%
Text-only manual is fine	7	29%
Text-only manual is fine as long as it has the QWS 'info recycling sheet'.	6	25%

Areas that Need More Education: Results of the Depot Attendant Quiz

In addition to providing feedback, the depot attendants also participated in a quiz on the manual's contents. This helped assess the effectiveness of each section in conveying information. The questions directly related to the contents of the manual. If many participants did not answer a specific question correctly, it most likely indicates that the information displayed on that topic needs to be improved or perhaps it is not relevant. It was clearly communicated to attendants that the quiz assessed the effectiveness of the manual and was not a formal assessment of their knowledge.

Please refer to Appendix 11 for a copy of the quiz with 20 multiple-choice questions. 22 out of the 24 depot attendants surveyed, completed the quiz. The average and median scores were both 14 or 70%. The responses aided in determining what areas need to have more education. The top five incorrect responses involved the following:

- Did not recall section for web sites: Perhaps this did not have much relevance to some depot attendants because they do not have access to a computer at the work site.
- Were not sure how to handle plastic flower containers from the nursery and tetra-paks.
- Thought the contamination rate of recyclables was at least 35%.
- Not aware of the proper disposal for cork (ex. natural cork used for bulletin boards, wine bottles etc.).
- Did not recall the group SWANA (Solid Waste Association of North America) mentioned in the manual. This group is a valuable resource for depot attendants.

Other areas where some depot attendants require more education:

- Understanding and being able to differentiate between the responsibilities of the municipality and the recycling service provider, as well as being able to identify 'who to call for what'.
- Being kept abreast of how to handle new products in the marketplace and 'grey area' items such as non-metallic containers with metal lids.
- Knowing what the plastic codes represent, especially 3 V because it is not collected for recycling in the current program.
- Knowing that chip bags are not recyclable.
- Knowing how to deal with excess recyclables.
- Being knowledgeable about the Acts and regulations relevant to:
 - recycling such as the Waste Diversion Act
 - prohibiting smoking such as the Municipal Act, and the Ontario Fire Code.

The chart below outlines the total number of errors for each question. It also states the theme that the question was addressing. It provides insight on what topics need more education and the information that needs to be conveyed more effectively.

Question Number	Theme Addressed	No. of Incorrect Responses	Percent of Attendants with Incorrect Answer
2	Did not recall section for web sites	16	73%
4	7 of them identified plastic flower containers from the nursery as not being recyclable. 6 of them identified tetra-paks as not being recyclable. The manual stated that both of these items were recyclable.	13	59%
15	Did not know the contamination rate of recyclables was only 4% as stated in the manual: 7 thought it was 35% 1 thought it was 65% and 1 thought it was 0% At least 3 did not know or were not sure.	12	55%
7	Not aware of the proper disposal for cork (ex. natural cork used for bulletin boards, wine bottles etc.).	11	50%
9	Did not recall the group SWANA mentioned in the manual.	10	46%
1	Did not recall the Who to Call for What section	9	41%
19	Did not recall the full name of the acronym WDA	8	36%
20	Were not clear on the main responsibility of Quinte Waste Solutions, which is to pick up the recyclables.	7	32%
16	3 thought that the statement "Do not place an overflow of recyclables in the garbage" was incorrect. 2 were not aware that you had to store excess recyclables in clear bags. 2 were not aware that plastic bags are placed in the 'fibrous' category (ex. with newspaper & other paper)	7	32%
13	Were not aware of how to handle metal lids on non-metallic containers.	6	27%
6	Were not aware of where to place plastic grocery bags.	6	27%
8	Were not aware of where to dispose of empty plastic oil jugs.	5	23%
12	Number of attendants that thought the following true statements were false:	5	23%

	<p>3 – “Leftover residue from improperly rinsed containers is a problem because it attracts wasps”.</p> <p>1 – “Plastic lids on non-plastic containers should be removed and placed into a plastic tub with a lid”.</p> <p>1 – didn’t know if statements were false or true</p>		
14	Did not know what the plastic code 3 & the letter V represented.	5	23%
3	Were not aware that chip bags cannot be collected for recycling	4	18%
18	Were not aware that the Municipal Act gives the municipalities the power to further regulate smoking in public places.	4	18%
17	Were not aware that prohibiting smoking in the recycling depot area (no matter if it is indoor or outdoor) is in accordance with the Ontario Fire Code.	2	9%
10	Did not recall a chart on how to handle certain ‘grey area’ recyclables.	2	9%
5	Thought that all CD cases were collected for recycling.	2	9%

Appendix 4: On-site Compaction of Materials: What are the issues?

The Phase I Report recommends the on-site compaction of materials in order to reduce the frequency of collection from the depot site.⁵ The theory behind compaction is that it increases the amount of recyclables that can be stored in a sea bin (roll-off bin). Compacting recyclables would decrease the number of trips to transport the same amount of recyclables, resulting in decreased transportation costs. Sea bins or roll-off bins could be retrofitted with compactors or designed for compaction at point of purchase. The purpose of this write-up is to provide municipal staff with relevant information when considering sea bins (roll-off bins) with compaction.



A typical Sea Bin at the Township of Marmora and Lake Recycling Depot

These bins are available in a variety of styles including open top or closed top with side openings. Most of the roll-off bins at the rural depots visited had side openings with several sections for each category of recyclables. Many sites also had a large open top bin for glass with only one or two sections for coloured and clear glass. When these bins are full, they are transported and emptied at the MRF and transported back to the rural depot for reuse. A roll-off bin may cost approximately \$10,000, whereas, a roll-off bin with a compactor may cost at least \$30,000.⁶ It is crucial to examine all issues associated with compaction, especially given the costs for it.

Three key informant interviews were conducted in order to uncover some key issues that discourage industry from supplying on-site compactors and deter municipalities from purchasing them for their rural recycling depot. Representatives from the industry were consulted including Martin Shanahan, Owner of Shanahan's of Phelpsston, and Joseph Simonetti, Sales Representative from ATS Containers. Both of them strongly discourage the use of compactors in roll-off bins. Joseph Simonetti provides a straightforward response, "I wouldn't do it, I would walk away from it".⁷ Nick Price, Waste Site Manager for the Marmora waste site was also consulted. He had investigated the use of an on-site compactor over one year ago and decided it was not worth the investment. In practice, implementing the recommendation for on-site compaction is a challenging task due to a number of issues including availability of space, access to power, safety, maintenance, bin design, and costs.

Space Issues

A major challenge is trying to determine where to place the compactor in the roll-off bin. A significant amount of roll-off bin space is lost when using a compactor. A compactor takes up to 7 to 8 feet in length of container

⁵ SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 32, Para.1, Line 1.

⁶ Interview with Martin Shanahan, Owner of Shanahan's of Phelpsston, June 25, 2007.

⁷ Interview with Joseph Simonetti, Sales Representative of ATS Containers, June 2007.

space. This significantly reduces the roll-off bin's capacity for holding recyclables. It is even less feasible for roll-off bins with several compartments to have a compactor, as some of these compartments would be taken up by the compactor. The roll-off bins at the sites visited in August 2006, have at least four compartments. Some sections of a bin fill up faster than other ones, so a movable wall may be used to expand sections that need more space. This helps to maximize the space used. Adding a compactor would limit the distance that the walls can be moved.

Access to Power

According to Martin Shanahan, compactors are hooked up to a 'Three Phase' power grid. Most places in rural areas including landfills do not have access to this type of power. It is possible to connect the compactor to a 'Single Phase' power grid but the electricity costs would be significantly high. The other option would be to incur costs associated with purchasing and operating a power generator.

Staff Safety Issue

The municipality would have to invest time and resources into staff training because of the nature of compaction machinery. Compactors are moving machinery, which pose safety risks if not used properly and require ongoing maintenance. It is also a liability issue as Mr. Shanahan mentioned that depot attendants can put themselves at risk by fiddling with the machinery. Depot attendants may unintentionally harm themselves or create more maintenance problems if they try to figure out or repair something on their own instead of getting expert help.

Public Safety Issue

The depot attendants will have to monitor the compactor to ensure that the public is not too close to the machine for safety issues. This consumes time away from other duties, such as monitoring recycling activities. The machine has a sensor. If movement is detected by the sensor, the machine turns off. People have to be away from the machinery in order for it to work. This is not always practical because the compactor is located in the roll-off bin. People need to be close to the roll-off bin in order to place recyclables in it. A compactor located in close proximity to the public is a safety issue and a potential liability for the municipality.

Compaction of recyclables may also result in the attraction of more wasps and animals, which may pose a safety risk. Roll-off bins had less problems with wasps compared to the regular '95 Gallon' carts. However, the story is not the same when a compactor is used. Roll-off bins with compactors have a problem with leakage. When recyclables are compressed, the leftover juice from the recyclables flows to the bottom of the container. The liquid leaks out of the container which attracts wasps and animals.

High Maintenance

Joseph Simonetti and Martin Shanahan both agree that compactors are high maintenance. A compaction unit is more complicated than it appears to be. Martin Shanahan emphatically states that, "I would not recommend compactors because of the high maintenance factor". The electrical switches have to be maintained on a yearly basis. Compactors are very high maintenance in the winter. You have to keep it running constantly and lubricate it more often. The compactor (piston sleeve) is a big arm that pushes down and compresses. When it compresses, it squeezes out any leftover liquid from the recyclables. The piston sleeve may get wet from the leftover liquid. If it is not well lubricated, the piston sleeve will freeze and will not be able to move.

Bin Design and Nature of Material

Adding a compaction unit to a bin poses a design challenge. A bin usually has several sections for each category of recyclables. The sections are separated from each other by retaining walls. Adding a compactor would require the restructuring of the top and side walls. It is not cost effective to have a roll-off bin with a compactor when it is only used to compact items in one of the sections. For example, staff may only want to compact hard containers (ex. plastic bottles/tubs and metal cans). Another roll-off bin could be purchased for the sole purpose of collecting and compacting hard containers but this requires an extra expenditure of at least \$30 000.

According to Martin Shanahan, plastic containers and cans can be compacted at about a ratio of 3:1. However, the nature of materials may decrease the effectiveness of the compactor. More pressure is required to compact containers with lids still not removed. The compactor may not be able properly compact plastic bottles with lids, unless there is a special technology to release the air pressure (ex. puncturing holes in the containers). Depot attendants do not have time to guarantee that all lids are removed from containers.

Cost Issue: A standard 20 cubic yard roll-off bin may cost in the \$10, 000 range. This cost triples to approximately \$30, 000 when a compactor is incorporated into the bin design. Retrofitting a roll-off bin is also very expensive and costs can range from \$20,000 to \$25,000.

Martin Shanahan and Joseph Simonetti both do not encourage the use of a compactor in a roll-off bin. It is not worth the cost, maintenance, and liability. On average, Mr. Shanahan estimated that he sells only two bins with compaction for every 400 open-top bins sold. There is a reason for this lack of sales. Some people in the industry and waste site managers simply want to avoid the hassles associated with it.

Doctor Crusher

A recyclable container crusher called 'Doctor Crusher' was also considered as an option. It costs approximately \$13,000. Containers (plastic/metal) are deposited in the unit, which perforates, flattens, and ejects the containers automatically. According to the product's web site, there is 30% more space in the compartment as a result, if not more. Ralph Baumung, President and Owner of Baumung Industries, mentioned that it has several benefits including a small size, extreme power to work effectively and continuously, and it perforates the materials which allows for greater compaction.⁸ Despite these benefits, using Dr. Crusher in a roll-off bin would not be his 'first choice'. It involves more expenses including the purchase of a hydraulic pump and the possible purchase of a power generator. A roll-off bin divided into several sections of different materials makes it more complicated because the crusher can only be used for containers. Adding a crusher to a container also poses a public safety issue as people are in close proximity to it. Mr. Baumung said he has never sold a crusher for use in a container at a rural depot. The technology has been used mainly for trucks and other purposes.

⁸ Interview with Ralph Baumung, President and Owner of Baumung Industries, September 17, 2007.

Appendix 5: Quick Reference List of 33 Recommendations

Theme 1: Responsible Depot Attendant

1. Designate a Waste Management Supervisor responsible for supporting depot attendants.
2. Extra staff should be provided for high traffic waste sites.
3. Extra staff should be provided to accommodate the influx of visitors during peak season.

Theme 2: Space to Accommodate the Increasing Volume of Recyclables

4. Investigate the use of sea bins to provide additional storage capacity.
5. Prepare in advance for overflow and shortage of containers.
6. A 'holding tank' should be provided to accommodate the overflow of recyclables.
7. Extra containers or large gaylords should be provided to accommodate the high volume of glass and Styrofoam.

Theme 3: The Wasp and Environmental Issues

8. Implement a variety of actions to reduce wasps.

Theme 4: User Friendliness of Site

9. Ensure that the recycling depot is located in a sheltered area.
10. The site should be well-maintained and have a neat layout convenient for the user.
11. Create an organized parking section to help manage traffic flow and discourage the idling of cars.
12. Convenient waste depot hours will encourage higher participation in the recycling program.
13. A convenient depot location will encourage higher participation in the recycling program.
14. The recycling procedure for customers (including promotion, education, and labeling) should be made as uniform as possible at all rural recycling depots in the service area.
15. Display overhead signs above each recycling bin.
16. Ensure the labels are clear and bright.
17. Use a numbering system on the metal bins to make it easier for the depot attendant to direct customers to the appropriate metal bin.
18. Labels or signs above bins should contain pictures to provide additional information to the customer.
19. Place clear signs at the entrance of the waste site informing customers of recycling and disposal procedures, materials bans and other important information.

Theme 5: A Safe and Healthy Environment

20. All rural recycling depots should have highly visible 'No Smoking' signs and policies.
21. Develop an anti-idling policy and post anti-idling signs to discourage the idling of cars.

Theme 6: Integrated Promotional Approach

22. There needs to be a more integrated promotional approach for the recycling depot which is supported by the municipality or township.
23. Each municipality or township should have one person assigned the responsibility of overseeing a comprehensive outreach plan for the recycling depots.
24. The recycling depot program should be promoted in high traffic areas.
25. Depot attendants should ensure they always have an adequate supply of recycling information sheets on-hand for customers.
26. The Quinte Waste Solutions' web site should be maintained and updated on a regular basis with relevant recycling depot information.

Theme 7: Training and Support for Depot Attendants

27. Depot attendants must receive appropriate training related to their roles and responsibilities at the depot. Based on the input gathered from the depot attendant interviews, training for permanent and temporary (floaters) depot attendants should address the following issues:

- Identifying recyclables
- Consistent understanding of the depot attendant role
- Lifecycle of recyclables
- Contamination and overflow issues
- Conflict resolution training
- First Aid
- Encouraging proper recycling behaviour
- By-laws and regulations

28. Additional support systems should be provided. Based on the depot attendants' input, the following support should be provided:

- An education manual should be developed and distributed to all depot attendants.
- Information exchange opportunities - There must be a vehicle for sharing information such as a newsletter, networking session, and on-site visits to other recycling depots that serve as leading examples.
- All depot attendants should have communication devices that enable them to contact and be contacted in case of emergency.
- All sites should have adequate amenities for the depot attendants and customers to use, such as fully operational washrooms.

29. Develop mandatory check-in procedures.

There should be a process requiring depot attendants to report to a municipal staff member at the beginning and end of their shift. This is important because many depot attendants work alone and there is a risk that nobody would know if anything were to happen to them.

30. Develop effective fee collection and monitoring procedures.

- During peak times, there should be an extra staff person to help with collection of user fees and to help free up time for monitoring activities.
- A fee collection system should be introduced to ensure effective collection of user fees and reporting procedures.

Theme 8: Customer Education

31. Respond to customer education needs.

Depot Attendants suggested that customer education needs to emphasize the following:

- Properly rinsing out recyclable containers
- Properly separating recyclables and reducing contamination
- Differentiating between acceptable and non-acceptable materials
- Providing uniform recycling procedures
- The lifecycle of recyclables
- The proper management of plastic recyclables
- Ensuring that customers are adequately informed about program changes

Theme 9: Promoting Greater Reuse

32. Establish reuse areas at the depot.

Theme 10: Waste Diversion Policies and Regulations

33. Implement uniform waste diversion policies.

Appendix 6: Cost Comparison of '95 Gallon' Carts Versus Sea Bins

The Phase 2 Rural Depot Report includes the recommendation to “investigate the use of sea bins to provide additional storage capacity” (Recommendation under Theme 2 of the report). Sea bins (or roll-off bins) are a more effective use of space than numerous individual '95 gallon' carts. They are also less labour intensive and there are fewer problems with wasps.

Although sea bins (or roll-off bins) may be a more effective use of space, it entails a high upfront cost. This section compares sea bins to the commonly used '95 gallon' carts from a cost perspective. The cost analysis includes the price of the container, and other costs associated with the container's lifespan. Refer to page 9 of the Phase 2 report for a picture of a sea bin and page 25 for a picture of a '95 gallon' cart. The comparison has two parts including 'In Theory' and 'In Practice'. First, a theoretical comparison will be made between sea bins and '95 gallon' carts, which reflects an ideal situation where the containers are being used to capacity. In reality, other costs accumulate in addition to the price of the container and other factors prevent the containers from being used to capacity. The 'In-Practice' section accounts for these factors. The comparison will be based on the experience at Quinte Waste Solutions (QWS).

One of the rural depots included in QWS' collection service region is Springbrook. The situation at this rural depot will be used as a case example for this comparison. This site has a 40 cubic yard sea bin, which is divided into 5 sections for the following items:

- plastic containers
- food and beverage cans
- newspaper
- boxboard
- glass

There are five slots on the top side of the sea bin for the public to deposit their recyclables.

Cost of Containers – Theoretical Comparison

The cost of each container will be compared by determining how many '95 gallon' carts are needed to hold the same amount of material in a single sea bin. Each container has a volume and weight capacity. Both factors will be used in the comparison because the weight of the material is important, especially when collecting heavier items such as metals. Volume is very relevant because the container may fill up quickly with bulky items such as Styrofoam, which take up space but are light in weight.

Volume Capacity

The volume capacity of a sea bin is 30.56 cubic meters and a '95 gallon' cart holds a maximum of 0.36 cubic meters. Based on the following calculation, it was determined that a sea bin at volume capacity is equivalent to using approximately 85 carts to hold the same amount of material.

Number of '95 gallon' carts required to hold the volume capacity of a sea bin:
(30.56 cubic meters divided by 0.36 cubic meters = 84.9 or 85 carts)

The cost of 85 carts is: $85 * \$80 = \6800

The initial purchase cost of a sea bin (\$9, 720) is more expensive than purchasing 85 '95 gallon' carts as an alternative, which would cost \$6800.

Weight Capacity

The weight capacity of a sea bin is 6000 kg and the weight capacity of a '95 gallon' cart is 102 kg. In reality, the weight capacity of the sea bin is less than 6000kg because it is not used only for the heaviest material. The sea bin is divided into 5 sections for a variety of material with different weights, including plastic containers, food and

beverage cans, newspaper, boxboard, and glass. If all of these sections were full, the maximum capacity should be roughly 4140 kg.⁹

Number of '95 gallon' carts required to hold the weight capacity of a sea bin:
(4140 kg in total/102kg = 41 carts)

The cost of 41 carts is: $41 * \$80 = \$3,280$

The initial purchase cost of a sea bin (\$9, 720) is more expensive than purchasing 41 '95 gallon' carts as an alternative, which would cost \$3,280.

In-Practice Section

Repairs and Lifespan

Quinte Waste Solutions has not tracked the lifespan of its '95 gallon' carts, including the number of repairs per cart etc. However, it is fair to say that the average lifespan of the '95 gallon' cart is approximately 7 years. As a rule of thumb, it is estimated that 1 in 10 carts would need repairs within any given year. Repair costs are \$40 per cart. These estimates are based on the experience at Quinte Waste Solutions. The following chart displays the container costs over a 20 year period.

Container Costs over a 20 Year Period

Type of Container	Number of Containers needed over 20 years	Cost (tax not included)	Repair Costs	Total Cost
sea bin	1	\$9720	A sea bin can last for 10 years until it needs rust removal and a paint job. Approximate cost for these repairs is \$1500.	\$11,220
'95 gallon' carts <i>Based on Volume Capacity Data</i>	Each cart has a 7 year lifespan, so each cart will need to be replaced approximately 3 times. Therefore the number of carts needed over 20 years: $85 \text{ carts} * 3 = 255 \text{ carts}$	The cost per cart is \$80. Therefore the total costs for 255 carts: $255 * \$80 = \$20,400$	Approximately 1 in every 10 carts will need repairs per year. Therefore the total number of carts needing repairs are : $85/10 * 20 \text{ years} = 170 \text{ carts}$ needing repairs The total repair costs are: $170 * \$40 = \6800	\$27,200
'95 gallon' carts <i>Based on Weight Capacity Data</i>	$41 \text{ carts} * 3 = 123 \text{ carts}$	$123 * \$80 = \$9,840$	$41/10 * 20 \text{ years} = 82 \text{ carts}$ needing repairs Total Repair Costs: $82 * \$40 = \$3,280$	\$13,120

⁹ This estimate was determined by collecting data for the weight of 1 cubic metre of each material and multiplying by 6.11 cubic metres, which is the volume of each section. Data was collected from numerous sources including numerous buyers of recyclable materials and:

When repairs and maintenance are taken into consideration, sea bins incur fewer costs as illustrated in the above chart. For the entire lifespan, they may only require rust removal and a paint job, which may cost approximately \$1500. On the other hand, the plastic '95 gallon' carts are not as sturdy and the handles can break easily. Approximately 1 out of every 10 carts needs repairs in any given year. Repair costs are \$40 per cart and can accumulate into a large expense over time. The '95 gallon' carts last just over one third of the lifespan of a sea bin, so they have to be replaced more frequently. Each cart costs \$80. From a repair and replacement cost perspective, sea bins are the most cost efficient. Not only do they require fewer repair costs, less time is consumed by staff having to deal with repairs. They also require less maintenance, especially when keeping them clean. It is easier to clean one sea bin rather than 41 to 85 individual carts.

The Number of Carts Used per Collection Period is another Factor

Although the volume capacity of a sea bin is equivalent to 85 carts and its weight capacity is equivalent to 41 carts, a site may not necessarily use this number of carts per collection period. As a result, the replacement bin and repair costs will be less than the costs stated in the chart above. A break-even point calculation determined that the maximum number of carts equivalent to the associated costs of a sea bin is 35. This calculation accounts for container lifespan and repair costs and does not include transportation costs.¹⁰

If the quantity of carts is greater than 35, a sea bin will cost less when taking into account repair costs and the number of replacements carts that have to be purchased over a 20 year time-period. The option for using carts should not be dismissed, especially for smaller depots that do not require as many carts per collection period. Other factors have to be taken into consideration before a decision is made, such as transportation costs, which are dependent on the type and amount of recyclables collected. Each recycling depot has its own unique situation, so transportation costs and other factors will vary from depot to depot.

Transportation Factor

The costs for transporting a sea bin from the waste site to Quinte Waste Solutions will be compared to the costs incurred if a QWS truck is used to transport recyclables that were collected from the '95 gallon' carts. The recycling depot in Stirling will be used for comparison purposes.

The cost to use a QWS truck to transport recyclables from the Stirling waste site to the MRF is \$152.71 per metric tonne. Therefore the cost to transport 4140 kg (4.14 metric tonnes) of recyclables is:

$$\$152.71 \text{ per metric tonne} * 4.14 \text{ metric tonnes} = \$632.22$$

It costs \$210 to transport a sea bin from the site to the MRF for disposal of recyclables, and then returned as an empty bin to the site. This is a fixed cost, so it does not vary according to the weight of the recyclables. If the sea bin was 4,140 kg full (its weight capacity), the fixed cost of \$210 would be comparable to \$50.73 per tonne. This is only one third of the cost per tonne for transporting materials collected in the '95 gallon' carts.

¹⁰ *Break-even Calculation for the Cost of a Sea Bin and '95 Gallon' Carts*

Let X represent the number of carts used each year

3 is the number of times that the carts have to be replaced

80 is the cost per cart in dollars

(X/10 * 20) represents the number of carts that have to be repaired over 20 years.

40 is the repair costs per cart in dollars

\$11, 220 is the total cost of a sea bin (initial purchase cost plus repairs needed over lifespan)

$$80 * X * 3 + (X/10 * 20) 40 = 11, 220$$

$$240X + 2X(40) = 11, 220$$

$$240X + 80X = 11, 220$$

$$320X = 11, 220$$

$$X = 35.1$$

Interestingly, the cost of hauling a sea bin is approximately the same as transporting materials collected from the carts by truck, if the sea bin only contains one third of its weight capacity. So if a rural depot collects more than 1.375 MT (more than one third of the sea bin's weight capacity), it costs less to transport a sea bin than to transport materials collected from the carts by truck. Therefore, sea bins are worth the investment from a transportation cost perspective, especially if collecting a lot of high tonnage items such as metal, glass, and newspaper. The sea bin at the Springbrook rural depot collected an average of 1.76 MT per collection period from January 2007 to the end of May 2007. More than 1.375 MT was collected during each collection period, with the exception of one collection run, which had 1.33 MT.

Summary of Findings

- The initial cost of a sea bin is more expensive than purchasing the necessary quantity of '95 gallon' carts to hold the equivalent amount of material when the sea bin has reached its volume capacity. The same statement applies when the sea bin has reached its weight capacity.
- In the long-run, sea bins (used at capacity) are more cost efficient than the '95 gallon' carts required to hold the equivalent weight or volume, when taking into account the initial purchase cost, and other costs that incur over a 20 year period.
- If a site uses more than 35 carts per collection period, a sea bin is more cost-efficient over a 20 year period. This is based on QWS' experience.
- It costs less to transport a sea bin than to transport materials collected from the carts by truck, if a rural depot collects more than 1.375 MT (more than one third of the sea bin's weight capacity).

In-Practice – The Case at Springbrook Rural Depot

Paul Donald, Depot Attendant at the Springbrook rural depot was interviewed about how to improve the sea bin's space efficiency. The sea bin usually contains less than half of its 4,140 kg weight capacity when it is collected. However, it contains enough tonnage of material each collection run to make hauling it less costly than transporting material collected from carts by truck. Currently, only 75% of the sea bin's volume is being used at the most, when it is collected. This is equivalent to using approximately 64 carts. According to the break-even calculation, the sea bin is less expensive because more than 35 carts are required to hold an equivalent amount of material. Even if only 50% of the sea bin's volume was used, it would be more cost effective to use the sea bin, as 43 carts would be required in its place. *A collection schedule should be arranged according to when it is estimated that the sea bin will be full. This will help decrease transportation costs.*

Prior to implementation of curbside pick-up of garbage and recycling in Stirling, the sea bin used to be overflowing during collection time. In this situation, here are some suggestions on how to improve the sea bin's space efficiency:

- A) Place the overflow in clear bags and set them aside (or set aside recyclables dropped off by the public in clear bags). Just before collection time, slide these clear bags over top of the rest of the materials. Please note: the overflow should be placed over materials from the same category.
- B) Educate the public on the importance of flattening materials (ex. collapsing cereal boxes, or even flattening plastic bottles by stepping on them etc.) and encourage them to do it. This saves a significant amount of space.
- C) The sea bin at Springbrook does not have moveable walls (they can swing back and forth). Co-mingling the materials will help lessen the problem of sections filling up unevenly. In the case of Springbrook, the plastic section was always overflowing. Co-mingling the plastic with metal containers would be a more space efficient solution.

- D) If possible, purchase a sea bin with 'user friendly' moveable walls. It is important to ensure that the depot attendants can move the walls easily and efficiently. Otherwise, it is not a practical option due to the inconvenience.

Overall, the benefits of a sea bin versus '95 gallon' carts, depends on the situation. As a rule of thumb, a QWS rural depot that uses more than 35 carts should consider a sea bin instead. Please note that the figure from the break-even calculation, accounts for cart replacement and repair costs from the context of QWS' past experiences.

In the case of the Springbrook rural depot, a sea bin appears to be a more cost efficient option. However, steps must be taken to maximize space efficiency and minimize transportation costs. Although sea bins have a higher upfront cost, they are more convenient to manage because there are fewer repairs over the lifespan. Overall, this comparison has demonstrated the importance of considering more than the initial purchase cost of a container. Other factors need to be taken into account, such as transportation costs and the costs that accrue over a container's lifespan.

Appendix 7: The Importance of Depot Attendant Involvement – Case Example

The Phase I report advises that, “A responsible depot attendant is the best defense against contamination.”¹¹ Depot attendant involvement is a key element for encouraging recycling and preventing contamination. This case examines three recycling depots to determine if higher recycling tonnage collected coincides with greater depot involvement. The chart below outlines the weight of recyclables collected for the three recycling depots.

Site	Recycling Tonnage Collected based on 2006 Data
A	89 kg/hh/a
B	57 kg/hh/a
C	79 kg/hh/a

It is remarkable that Site A has the highest recycling tonnage collected, considering it does not have user fees ('bag tags' for garbage), while

the other sites do. Although Sites A and C are not centrally located in their service areas, they have a significantly higher rate of recycling collection compared to Site B, which is centrally located. The main commonality between Site A and Site C is that they both have very dedicated depot attendants who are very involved in every aspect of managing the depot and they have an on-site supervisor. Also, they are both open by more than an extra day compared to Site B.

Sites A and C are considered leading examples in terms of site design and maintenance. Based on observations, they were both well maintained and the depot attendants really took initiative when managing the site. For example, the depot attendants at Site C took initiative to copy a section of the education manual (all three rural depots have this manual) that explains the products derived from the recyclables, and distribute it to the public as a source of encouragement. Both leading sites also take initiative in dealing with problems stemming from limited resources. Site C has a special rotating cart system that makes the most efficient use of space and recycling carts. Attendants from Site A work closely with QWS drivers to deal with the container shortage issue. Every effort is made by them to ensure that excess recyclables are collected on time. They also go above and beyond 'the call of duty' by volunteering to sort the recyclables for residents.

Unlike these leading sites, Site B was not as well-maintained and did not have an on-site manager or a supervisor that was very involved with the day to day operations. There is a lack of communication between the attendant and the supervisor, as well as municipal office staff. The attendant expressed a desire to have more communication and involvement with his supervisor. The supervisor is preoccupied with other aspects of his job, so the waste site is less of a priority. As a result, the attendant finds it more efficient to deal directly with municipal clerk. There does not appear to be a harmonious relationship between the depot attendant and the municipal clerk. The attendant also speaks directly to councilors when they drop off their recyclables and garbage. This is not a formalized method of communication.

The depot attendants at Site A, which have the highest amount of recycling tonnage collected, communicate more frequently with the municipal office staff. The waste site supervisor works mainly on-site and visits the municipal office a couple of times per week and reports back to staff.

Although the depot attendants at Site C do not have routine meetings or visits with municipal office staff, they appear to have a harmonious relationship with them and call for assistance when necessary. This is the only site that has electricity, so having a land line phone allows for easier communication. Depot attendants are not as dependent on contacting municipal staff because there is an on-site supervisor.

This case example demonstrates that depot attendant involvement coincides with greater recycling tonnage collected. It is not surprising that Site A and Site C have the highest collection of recycling tonnage. A depot attendant needs the support of a dedicated supervisor who is closely in tune with the day to day operations of the site. There needs to be effective communication between the depot attendants and municipal staff. This constant communication helps municipal staff keep abreast of any issues or anticipate problems. It also enables both parties to work together more effectively in addressing issues. Most importantly, a dedicated depot attendant who takes initiative, is crucial for a waste site to be managed to its potential.

¹¹ SGS Lakefield Research Limited. *Evaluation of Best Practices of Rural Recycling Depot Programs*. Lakefield: SGS Lakefield Research Limited, 2006. Page 31, Para.6, Line 1.

Appendix 8: Contamination According to Material Type

The depot attendants at the Wollaston Recycling depot tracked the number of items improperly sorted. These collected items are referred to as 'contaminants'. This audit occurred during Pilot Test 2, which tested the effectiveness of different recycling depot layouts/signs. Data was collected for a 9 week period from March 5 to May 6, 2007. The chart included below displays the percentage of total contamination for each type of recyclable. This information is valuable for determining customer education needs. Over half of the total errors stemmed from plastic (54%). Plastic bags accounted for 29% of the total errors.

Total Contaminants Broken Down by Item Type

Type of Item	Total Number of Contaminants	Percentage of Contaminants
Plastic Bags	181	29%
Rigid Plastic	124	20%
Paper	79	12%
Glass	72	11%
Cans	42	7%
Styrofoam	34	5%
Milk Cartons	29	5%
Garbage	24	4%
Cardboard	20	3%
Tetra Pak	14	2%
Boxboard	13	2%
Foil	2	0.3%
Total	634	100%

As part of the QWS recycling program, plastic bags must be placed with fibrous materials (ex. newspaper) rather than non-fibrous materials (ex. plastic/metal containers). According to attendants, people do not tend to differentiate between rigid plastic and soft plastic film. 'Plastic is plastic' from their perspective, so it only makes sense for them to place the full spectrum of plastic in the non-fibrous category (rigid containers). Grocery bags are the main form of plastic film being placed in the wrong category. Also, people are confused about what type of plastic film can be recycled as one depot attendant explains, "There appears to be some additional confusion in regards to the plastic film. So many things are now in packets and pouches, so people aren't sure what to recycle and what is garbage. We are confused too".

Plastic bags can also get dumped in the non-fibrous (rigid containers) cart because people use them to carry their rigid containers. After emptying the bag contents, they end up dropping the bag in the cart as well. Another problem is that hard (rigid) containers are sometimes misplaced in the fibrous cart simply due to poor sorting. On the other hand, diligent recyclers may have a few rigid containers in their box or bag full of paper. These rigid containers mistakenly fall into the fibrous cart, when the resident empties all of the paper out of their box or bag.

Some rigid containers are placed in the glass bin because they have a similar shape. Likewise, most of the misplaced glass is found in the non-fibrous (rigid containers) cart. The depot attendant thinks that people leave glass on top of their blue box that is full of rigid plastic, in order to keep it separate. Then they forget it's there and dump the all of the blue box contents in the non-fibrous (rigid containers) cart. There needs to be more education on the importance of making the effort to ensure that recyclables are not only properly sorted but properly placed too.

Overall, the findings of the audit reveal that more customer education should be focused on how to properly sort plastic items of all types. There needs to be a special emphasis on plastic film, including what constitutes acceptable plastic film and where it should be placed.

Appendix 9: The Township of Wollaston's Reuse Centre

The Township of Wollaston's recycling depot is the only place of all the sites visited that has an organized section for reusable items. It serves as a leading example with its 'user friendly' layout. Items are sold at a low price ranging from a dime to a quarter and the profit is given directly to the municipality. Last year, the depot attendants collected over \$600 from selling used items. People can donate used items and the attendants retain some items for reuse at no charge. For example, planters are placed aside in the Springtime for people to take for their gardening.

At the end of peak season, the attendants usually arrange a 'free day' to give away the remaining reusable items. Most of these items are taken by the public for reuse. The remaining items are recycled whenever possible. According to the waste site manager, this dramatically cuts down on reusable items going to landfill.

The success of a 'used item' section is dependent on the layout of it. Some waste sites placed reusable items into a big messy pile, which is not appealing to the public. For example, one site had two trailers full of reusable materials, which were stacked in a disorganized pile. People may not be encouraged to take reusable items because it is too cumbersome and time consuming to sift through everything in the pile. A 'used item' section needs to be organized into categories so items can be easily found. For example, farmers can find used plastic jugs and egg cartons, or a tradesperson can find used electrical appliances etc. Connections should also be established with non-profit organizations, so they can be notified if there are any used items available that would be beneficial to them. These groups could also provide drop-off bins for used items such as clothes or books.

'Used Items' Section at the Wollaston Rural Depot



Education Booklet for Recycling Depot Attendants



Quinte Waste Solutions

January 2007

**270 West St., Trenton, Ontario K8V 2N3
(613-394-6266 or 1-800-210-0762)**

Introduction to Training Booklet

During August of 2006, depot attendants at sixteen waste site locations in Hastings County and Prince Edward County were interviewed in order to gain feedback on how to improve the recycling depots. Many attendants expressed the need for more training and educational support. Working as a depot attendant can be isolating at times, especially given the physical location of the job. For the most part, attendants work by themselves and it is not always easy for them to get access to current information. As a result, unanswered questions start to accumulate. Many attendants admit they rely on their own judgment when unsure about something or they ask the QWS (Quinte Waste Solutions) truck driver. This booklet is intended to help answer some of the questions raised during the depot attendant interviews. Please review the material to ensure that you have thorough knowledge of it. We hope that this information will be helpful for your job.

Allison Ross, Special Projects Coordinator and Rick Clow, General Manager of Quinte Waste Solutions, would like to thank all of the depot attendants for their time spent providing feedback on how to improve the recycling depots. We really appreciated your thoughts and ideas.

For additional copies of the booklet, please contact Allison Ross or Rick Clow at Quinte Waste Solutions.

Educational Booklet Prepared by:

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Questions and Answers

General Recycling Questions

How do I know what items can be recycled? Please refer to the Beside/Inside card for a list of items that can be recycled and always use it as your guide.

What should I do if I read the Beside/Inside Card and I am still not sure if an item is recyclable?

- If you are still unsure about the recyclability of an item, you may call Quinte Waste Solutions (QWS) to find out.
- If you come across numerous items that are questionable, compile a list of these items and go over them with a Quinte Waste Solutions employee on a periodic basis.

Phone Number for Quinte Waste Solutions: 613-394-6266

Gray Area Recyclables

There are an increasing number of products and product packaging being sold in the market. Many depot attendants expressed that they are not always clear on how to recycle some of the items. These items are referred to as 'gray area' recyclables. Some attendants admit that they have to rely on their own judgment in determining if and how these items should be recycled.

Here is a list of 'gray area' recyclables identified by some of the depot attendants. These items CANNOT be recycled:

plastic pools
plastic blow-up floats
pool noodles
dinghies or blow-up boats
CD cases
bale wrap
oil jugs
plastic boot mats
blinds
chip bags and the wrapping used for granola bars etc.

Plastic items with the code 3 and the letter V: This stands for vinyl chloride which cannot be recycled and contaminates the process. Fortunately, most plastic bottles are not made from this material. It is difficult to distinguish them from other plastics unless you look closely at the code. As a result, they may end up getting mixed in with the recyclables. A few of these improperly placed containers will not ruin the whole recycling process but it is better practice to place them in the garbage if spotted. Although it is difficult to monitor for this, you can educate the public to dispose plastic with this code in the garbage whenever possible.

How to deal with other ‘gray area’ items:

Item	How to Handle It
plastic flower containers from the nursery	recycle as most of them are usually made from recyclable plastic
plastic flower containers from other retail stores	recycle only if there is a recycle symbol
‘soft’ plastic flower containers	some are made from paper or pressed peat moss, which should be composted and not recycled
plastic oil jugs	do NOT recycle but it is OK to place EMPTY jugs in the garbage
cork	cork is considered organic material and should be composted
plastic bags such as grocery bags	should be placed with the fibrous recyclables such as newspapers, papers etc.
plastic milk crates	recycle but encourage reuse of crates if they are in good condition: some stores participate in a deposit return system for milk crates depot attendants may want to offer these local stores good crates to replace any missing crates so the stores can avoid losing deposits

Contamination of Recyclables

What percentage of improperly rinsed containers contaminates the recycling process?

As a general rule of thumb, the lesser the residue left in a recyclable, the less contamination it contains. Rinsing containers is important but the greater concern is ensuring that containers are completely empty. It is important to encourage customers to rinse containers so that they do not bring half empty items such as half a jar of peanut butter to the depot.

What percentage of half empty jars will contaminate the process? This is difficult to determine. For ease of communicating with the public and the goal of taking a precautionary approach, the public must be educated that “any partially empty containers are too many”.

Why is it still important to properly rinse containers of leftover residue?

Wasps are attracted to leftover residue of improperly rinsed containers. They are a nuisance and can deter people from using the recycling depot. Depot attendants should actively encourage the public to rinse containers by educating them on the importance of properly rinsing containers and refusing to accept improperly rinsed containers.

Rinsing can be as easy as including the container in a dishwasher load.

How do you recycle a lid made of different material from the container?

Metal lids on non-metallic containers

Metal lids from glass jars/bottles should all be placed in one can. For example, place the metal lids in a large can such as a Tim Horton's coffee can and place the plastic lid back on it.

Plastic lids on non-plastic containers

Plastic lids on non-plastic containers should be removed and placed into a plastic tub with a lid. The recycling facility sorters will not separate plastic lids from cans because it is not worth the time from a cost perspective and they do not handle metal cans as this sorting is automatic.

Brush Pile

What should be done with the brush pile?

Please contact SWANA for the Landfill Operation Manual on how to handle brush piles among other things.

Contact: John Lackie, Executive Director of SWANA

Phone: 705-835-6224

Email: j.lackie@sympatico.ca

If burning the brush pile is permitted by the municipality, what can be burned?

What can be burned: only clean brush can be burned

What cannot be burned: wood that contains any traces of paint, wood treatment, or chemicals

Overflow of Recyclables

How should I deal with an overflow of recyclables?

Do not place in garbage under any circumstances

'Word gets out' and we cannot expect people to comply with the recycling program if we do not.

Anticipate when you will receive an overflow of recyclables

Call Quinte Waste Solutions in advance to inform them of when you expect to receive an overflow of recyclables based on the yearly trend of peak periods.

Be prepared for an overflow of recyclables by budgeting for the purchase of more bins
Accommodating for the overflow of recyclables will result in a savings from landfill costs. Another option is to arrange in advance to borrow bins for peak periods.

Store the unexpected overflow of recyclables in clear bags. The truck drivers are not allowed to empty the clear bags so refill the bins that are being emptied by the truck driver with the contents of the clear bags.

Excess recyclables may be stored in plastic bags but they must be **clear bags**. When the truck driver arrives to empty the bins, you must be available to re-fill the bins with the excess recyclables so they will be emptied too.

QWS is only responsible for picking up the recycling. If the depot attendant is not scheduled to work when the recyclables are picked up, it is his/her responsibility to inform municipal staff of the need to have a staff member available to help re-fill bins with excess recyclables.

If you receive an excess of recyclables that cannot be accommodated, call Quinte Waste Solutions for help.

Quinte Waste Solutions may be able to service that source directly. Avoid dumping in landfills because of the limited space and to avoid unnecessary landfill costs.

Please arrange for a designated municipal staff person that you can contact on the weekend and/or evenings when you need help dealing with an unexpected overflow of recyclables. If the strategies mentioned above to deal with the overflow are not possible to do for whatever reason, it is important to arrange for a back-up person to call for support and advice.

In order to prevent unexpected overflows of recyclables, try to identify why there is an overflow and inform Quinte Waste Solutions.

The staff at Quinte Waste Solutions will help resolve the issue.

Lifecycle of Recyclables

How are my efforts making a difference?

- Recyclables are transported to the MRF (municipal recycling facility) where they are sorted into categories and sold to markets that use them to make new products.
- Only 4% of the items collected at the MRF are disposed as garbage.
- Another 4% is considered garbage when it reaches the mills (market buyers)
- The term 'garbage' includes contaminated recyclables, garbage, and misdirected recyclables such as a glass bottle in a bale of newspaper at a paper recycling facility.

The following chart outlines what is made from each of the recyclables.

Recyclable	What Happens?	New Product
glass	<p>Clear glass is used to make new glass: It is crushed and mixed with sand, limestone and soda ash (same things that new glass is made from). It is then heated and molded into new jars and bottles.</p> <p>Coloured glass is washed, crushed, and spun to make fiberglass.</p> <p>Glass is also crushed and washed to make other items.</p>	<p>glass jars and bottles</p> <p>fiberglass</p> <p>glass beads</p> <p>reflective paint</p> <p>sandblasting material</p>
paper including: newspaper magazines office paper milk cartons	Paper is de-inked and processed to make new paper products. Some white ledger paper is added in the process to keep the quality up, as paper becomes weak and transparent when recycled.	<p>Paper products such as:</p> <p>newspaper</p> <p>tissue</p> <p>paper towels</p> <p>napkins</p> <p>toilet paper</p>
old Boxboard and mixed paper such as books	The Boxboard and mixed paper are re-pulped and made into new Boxboard.	<p>shingles</p> <p>new Boxboard (ie. Tide and Sunlight soap boxes, beer cases etc.)</p>
old corrugated cardboard	Corrugated cardboard is usually re-pulped and made into new corrugated cardboard.	new corrugated cardboard
tin	It is usually placed in a blast furnace and smelted into reinforcing bars.	made primarily into reinforcing bars used for construction purposes
Recyclable	What Happens?	New Product
aluminum cans and foil	Cans are shredded and paint is removed. Then they are melted down into ingots. The ingot is rolled into sheets from which new cans are formed.	<p>aluminum cans</p> <p>aluminum foil</p>

<p>plastic in general</p>	<p>Plastics are ground and pelletized or extruded. Material is then used to make new products.</p>	<p>Pop bottles become: fibre fill for winter coats and sleeping bags clothing (polyester) life jackets car bumpers and auto body parts</p> <p>Bleach Jugs become: Blue Boxes toys drain pipe</p> <p>Margarine tubs and lids become: pallets plastic lumber twine and rope</p> <p>Coffee cups and packaging become: trays video & audio cassettes rigid foam insulation</p>
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Types of Plastic	New Product
PETE (polyethylene terephthalate) Code 1	carpet, pop bottles
HDPE (high density polyethylene) Code 2	drainage tile, bleach jug
PVC (polyvinyl chloride) Code 3	no current markets – do not collect
LDPE (low density polyethylene) Code 4	pallets
PP (polypropylene) Code 5	pallets
PS (polystyrene) Code 6	nursery containers
Plastic Film (polyethylene) such as plastic bags Code 2 & 4	plastic lumber

Relevant Regulations

Regulations Pertaining to Smoking

For the health and safety of the public, smoking should not be permitted at the recycling depot

Smoking is a fire hazard because the ashes may fall into the container and start a fire. Containers full of newspapers would catch fire more easily than a container of plastics. However, the fumes would be highly toxic if the plastic recyclables were to catch on fire. Prohibiting smoking in recycling depots is just common sense and coincides with the Ontario Fire Code.

Ontario Fire Code

Recyclables are considered salvageable materials subject to the following Ontario Fire Code, which states, “Smoking shall be prohibited in salvage yards, except as permitted in Subsection 2.4.3.”¹² The Subsection 2.4.3 includes the following; “Where conditions are such as to make smoking a fire or explosion hazard, smoking shall be permitted only in specifically approved smoking areas”.¹³

Smoke-Free Ontario Act

The Smoke-Free Ontario Act bans smoking in an enclosed public space or enclosed workplace covered by a roof.¹⁴

Municipal Act

This Act gives the municipalities the power to further regulate smoking in public places.¹⁵

¹² *The Ontario Fire Code*, 2001 (Part 3, s.3.5, ss.3.5.1.9)

¹³ *The Ontario Fire Code*, 2001 (Part 2, s.2.4, ss.2.4.3.1)

¹⁴ *Smoke-free Ontario Act*, 1997 (c.10, s.9, ss.1)

¹⁵ *Municipal Act*, 2001 (c.25, s.115, ss.1)

The Provincial Regulations Driving Recycling

Waste Diversion Act (WDA)

The purpose of this Act is to promote the reduction, reuse, and recycling of waste and to provide for the development, implementation, and operation of waste diversion programs.

The WDA empowers the Minister to designate a material for which a waste diversion program is to be established. Waste Diversion Ontario was created under this Act to develop, implement and operate waste diversion programs.

Environmental Protection Act

The Ontario Environmental Protection Act contains the 3 R's regulations. The objective of these regulations is to reduce the amount of municipal waste going to landfill. The 3R's regulations apply to non-hazardous solid waste from residential, industrial, commercial, and institutional (IC&I) sources.

These regulations include the following requirements:

Creation of a Blue Box Waste Management System

A local population of at least 5000 people must establish, operate and maintain a Blue Box waste management system if the municipality is served by a waste management system. Blue Box material must be accepted wherever municipal waste is accepted from the public.

Waste Generators must Conduct a Waste Audit and Complete a Waste Reduction Workplan

Waste audit and waste reduction workplans are required for industrial, commercial, and institutional places of a certain size.

Regulations at the Municipal Level

Regulations vary from municipality to municipality. It is important to understand these regulations in case the public ask about them. Please contact municipal staff to obtain a copy of the municipal regulations that promote or enforce recycling such as user pay programs (ie. 'bag tags') and bag limits etc.

Who is Responsible for What

It is important to clarify that Quinte Waste Solutions (QWS) is responsible for picking up recyclables. Waste Management Inc. won the tender by Quinte Waste Solutions to carry out this duty. The waste site's municipality is responsible for the rest of the recycling depot operations. Although QWS is only responsible for recycling pick-up, the QWS staff is available to answer recycling questions, provide additional promotional support, and offer advice on issues such as how to deal with excess recyclables. However, promotion of the recycling depot, operating of the depot, other operations, and other issues are the responsibility of the municipality.

Who to Call for What

Questions, concerns, or ideas about the recycling depot operations: Municipal Staff

Questions or concerns addressing the pick-up of recyclables, requests for more recycling literature, and questions addressing recycling:

Quinte Waste Solutions
1-800-210-0762

Further information on landfill waste management including educational, technical, and training assistance:

John Lackie, Executive Director
Solid Waste Association of North America (SWANA)
P.O. Box 9
Hillsdale, Ontario
L0L 1V0

Telephone: 705-835-3560
Cell Phone: 705-794-0206
Fax: 705-835-6224
Email: j.lackie@sympatico.ca
Web Site: www.swanaon.org

SWANA is a non-profit educational organization that serves individuals and groups responsible for management and operations of municipal solid waste management systems. It is highly recommended to consult SWANA's web site on a regular basis to keep updated on the numerous workshops, training, and educational programs offered on waste management. The Big Picture of Recycling – Chart to be inserted when I figure out how – it's landscape

The Big Picture of Recycling

Ontario's Waste Diversion Act

The purpose of this Act is to promote the reduction, reuse, and recycling of waste and to provide for the development, implementation, and operation of waste diversion programs. The WDA empowers the Minister to designate a material for which a waste diversion program is to be established.

Once the Minister has designated a material through a regulation under the Waste Diversion Act, the Minister asks Waste Diversion Ontario, working cooperatively with Stewards, to develop a diversion program.

Waste Diversion Ontario (WDO)

This organization is a non-Crown corporation established under the Waste Diversion Act. It was created to develop, implement, and operate waste diversion programs for a wide range of materials.

Effectiveness and Efficiency Fund (E&E Fund)

This fund operates under the direction of Waste Diversion Ontario and is implemented by Stewardship Ontario. This fund offers financial support to Ontario Municipalities for their residential 'Blue Box' recycling programs. The fund aims to help municipalities reduce costs and increase tonnes recovered.

Quinte Waste Solutions (QWS)

QWS is an organization responsible for all waste reduction programs for a group of municipalities in Hastings and Prince Edward counties. It is administered by the Centre & South Hastings Waste Services Board, which is made up of one representative from each of the member municipalities. QWS operates the Blue Box recycling program, Hazardous Waste Collection programs as well as programs to divert organic materials from landfill. It also offers contract recycling services for other municipalities in the Quinte area.

Stewardship Ontario (SO)

This is Ontario's first Industry Funding Organization, which was formed in late 2002. It was created in response to the Ministry of Environment's request for WDO to submit a waste diversion program for Blue Box wastes. The WDO submitted the Blue Box Program Plan, which was approved by the Minister of the Environment on Dec. 23, 2003. Stewardship Ontario is empowered to implement the Program outlined in the Plan. The Waste Diversion Act requires all companies that introduce packaging and printed paper into Ontario's consumer marketplace, to be 'stewards' and share in paying 50% of the funding for Ontario's municipal Blue Box waste diversion programs. These companies must register by law, with SO and submit sales data and fees.

Waste Management Inc.

This company carries out recycling collection under contract for QWS.

Web Sites

For further information on the groups outlined in the graph on the previous page, you may access the following web sites:

Waste Diversion Ontario

www.wdo.ca

Waste Diversion Act

For more information on the Waste Diversion Act, access Waste Diversion Ontario's web site and select Waste Diversion Ontario on the left side of the top menu bar. Then select Legislation, By-Laws, and Policies in the drop down box and a new list should appear. Click on Waste Diversion Act from that list.

(Waste Diversion Ontario – Legislation, By-Laws, and Policies – Waste Diversion Act)

Stewardship Ontario

www.stewardshipontario.ca

Effectiveness and Efficiency Fund (E&E Fund)

Access the Stewardship Ontario web site and select E&E Fund from the menu on the left side.

Quinte Waste Solutions

www.quinterecycling.org

Waste Management Inc.


www.wm.com

Appendix 11: Questions for the Education Manual

Depot Attendants


Your input is greatly appreciated in helping us determine the effectiveness of the educational booklet.

1. **Please circle the appropriate number** to rank the book's usefulness for depot attendants with one being not useful to five being very useful.

1	2	3	4	5
				
Not useful	Minimal Usefulness	Somewhat Useful	Useful	Very Useful

Please explain your ranking:

2. How much of the booklet did you read? Please be honest as the main purpose is to assess the effectiveness of the booklet.

1	2	3	4	5
				
None	Less than half of it	Most of it	Thoroughly read it	Thoroughly read it and reviewed it again

Please explain your ranking:

3. Please identify what you found useful and any suggestions for improvements. (ex. content needed/not needed)

4. For the sake of keeping the manual short in length, visuals were not added in the training manual. Please circle the letter of the answer that best describes **your needs in a manual**.

- a) the manual must have some visuals
- b) the manual must have an equal balance of text and visuals
- c) the manual must consist mainly of visuals
- d) a text only manual is fine
- e) a text only manual is fine as long as it has the QWS recycling sheet (this sheet is presently included at the back of your manual and contains graphics)

Confidential Question -- Optional

As people process information in a variety of ways, we are considering other forms of this manual. Answering these questions will help us determine how to best suit your needs.

Please circle the number of the statement that best describes how easy it was to read and process information from the manual:

1	it was somewhat challenging
2	no problems
3	very challenging
4	it could not be read
5	very easy to read

Please explain your answer if you wish:

Depot Attendant Quiz

Depot Attendant Questions

The goal of this exercise is to assess the effectiveness of the educational package. Although you may find the results of this exercise useful in identifying areas that you know or may not know, it is **NOT** a formal assessment of your knowledge. Please circle the letter which corresponds to your answer.

1. Which of the following sections does the manual contain?

- a) Listing of all of the Members of Provincial Parliament (MPP's) for the region
- b) Who to Call for What
- c) Pictures of Recycling Depot Initiatives
- d) b and c

2. The manual contains:

- a) a section for proper attire
- b) a section for web sites
- c) both a and b
- d) none of the above

3. What items cannot be recycled?

- a) chip bags
- b) milk cartons
- c) plastic water bottles
- d) all can be recycled

4. What items cannot be recycled?

- a) aluminum cans
- b) plastic flower containers from the nursery
- c) tetra-pack juice boxes
- d) all can be recycled

5. What items cannot be recycled?

- a) newspaper
- b) pool noodles
- c) CD cases
- d) CD cases AND pool noodles

6. Please circle the correct answer. Plastic grocery bags should:

- a) not be recycled
- b) be placed in the bin for glass
- c) be placed in the bin for fibrous recyclables (ie. with newspapers etc.)
- d) be placed in the bin for non-fibrous recyclables (ie. with plastic containers etc.)

7. The natural material of cork (ie. natural cork used for wine bottle corks and bulletin boards etc.) is considered:

- a) non-recyclable and should only be placed in garbage
- b) recyclable and should only be placed in the bin for corrugated cardboard
- c) organic material and should be ideally composted
- d) hazardous waste

8. It is OK for empty plastic oil jugs:

- a) to be placed in the garbage
- b) to be placed in recycling at your depot
- c) to be returned to retailer as they are not to be placed in garbage ever
- d) to be burned

9 Which group was mentioned in the booklet?

- a) TERRA
- b) REACH Co-op
- c) SWANA
- d) CCWM

10. The booklet contains a chart on:

- a) Recycling recovery statistics of each municipality for the past 5 years
- b) How to handle certain 'grey area' recyclables

11. What can be burned in the brush pile if burning brush is permitted?

- a) Polystyrene with code number 6
- b) Polypropylene with code number 5
- c) Clean brush
- d) Clean brush and polypropylene with code number 5

12. Which of the following is false?

- a) You should encourage the public to properly rinse their containers before bringing them to the recycling depot.
- b) The leftover residue from improperly rinsed containers is a problem because it attracts wasps.
- c) Plastic lids on non-plastic containers should be removed and placed into a plastic tub with a lid.
- d) None of the above.

13. What should you do with metal lids on non-metallic containers?

- a) They should all be removed and placed in one can, which is sealed with a lid so they do not spill all over the place.
- b) They should all be removed and thrown in the bin for metal, except for metal lids on glass jars. Metal lids can be kept on glass jars.
- c) They should not be removed as metal detectors will remove them from the containers during the recycling process.
- d) None of the above

14. Plastic items with the code 3 and the letter V represent:

- a) Vinyl chloride, which is part of the recycling program.
- b) Vinyl chloride, which contaminates the process because it is not part of the recycling program.
- c) Polyethylene terephthalate, which can be recycled
- d) None of the above as there is no such thing as code 3 with the letter V

15. Approximately what percentage of items processed at the municipal recycling facility (MRF) is disposed as garbage?

- a) 65%
- b) 0%
- c) 35%
- d) 4%

16. Which of the following sentences is INCORRECT?

- a) Do not place an overflow of recyclables in the garbage.
- b) Excess recyclables may be stored in plastic bags but they must be clear bags.
- c) Plastic bags can be placed with newspaper and other paper.
- d) None of the above

17. Prohibiting smoking in the designated recycling depot area (no matter if it is indoor or outdoor) is in accordance with the Ontario Fire code.

- a) true
- b) false

18. The Municipal Act gives the municipalities the power to further regulate smoking in public places.

- a) true
- b) false

19. The WDA is an important provincial law that drives recycling. It stands for:

- a) Waste Decreasing Act
- b) Waste Diversion Act
- c) Waste Direction Association
- d) None of the above

20. Quinte Waste Solutions is responsible for:

- a) Operating the recycling depot
- b) Dealing with the shortage of containers for overflow recyclables
- c) Picking up the recyclables
- d) All of the above